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A QUARTERLY FOR THE DENTAL TEACHER

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"To earn goodwill, one must first show it. To win confidence, give confidence. Frankness breeds frankness."

—Perle Mesta

EDITORIALS

A Tribute

This issue of the JOURNAL lifts its new face in high tribute to and in recognition of the splendid service rendered by our former editor, John E. Gurley. Dr. Gurley brought to the JOURNAL a vast and varied experience in journalism, all of which has been reflected by his success as our editor during the past six years.

Over and beyond the recognition and esteem of his colleagues, Dr. Gurley has gained the admiration and endearment of all whom he has reached through his activities in journalism. We admire him for his forbearance, we praise him for his success, and above all, we thank him for his tireless efforts and contributions in our behalf.

Pacific Coast Conference on Dental Teaching

There are before us four printed programs which can be examined in chronological sequence. Each of these bears the phrase "Pacific Coast Conference on Dental Teaching." The first is cautiously labeled, "A Conference on Dental Teaching." The 1950 conference, held at the University of Oregon, dealt with different teaching methods, particularly methods of student evaluation. The University of California sponsored in 1951 "The Second Western Conference on Dental Teaching." This too went off well, and considered the use of audio-visual aids in dental teaching. The University of Washington issued an invitation for the group to come to Seattle the following year; their program was headed, "The Third *Annual* Pacific Coast Conference on Dental Teaching." The conference in Seattle was devoted to research methods, with a demonstration of major tools available and a review of the use to which dentistry has put them. The designation "Annual" was given to the Fourth Pacific Coast Conference on Dental Teaching almost as a matter of course.

Another pertinent fact found in the various programs is the evidence of material support and encouragement conveyed by the phrase, ". . . with the assistance of the W. K. Kellogg Foundation." Each of these conferences has meant hours of thought and preparation within the participating schools, but the Kellogg Foundation has enabled the planners to expand their list of speakers and, in 1951, to test television as an audio-visual aid.

The Fourth Conference was held September 9-11, 1953, on the campus of the University of Southern California, to consider "The Dental Curriculum." Two authorities from east of the Rockies appeared on the program: Dr. Shailer Peterson, Secretary, Council on Dental

Education, and Dr. Lloyd E. Blauch, Chief for Education in the Health Professions, Office of Education, Federal Security Agency. The University of Southern California gave generously of its assets, represented not only in the talents of its dental faculty, but also with administrators and men from other schools and colleges. President Fagg appeared before the group, as did Deans Tracy E. Strevey of the College of Letters, Arts and Sciences, and Gordon E. Goodhart of the School of Medicine, and Professor Frank C. Baxter of the English Department.

Drs. Blauch and Peterson, Deans Strevey and Goodhart, and others were asked to, and did outline the broad objectives of the dental curriculum. The goals presented by these gentlemen were subsequently discussed by participants at the conference. Also under the titles, "Basic Sciences," "Technical Subjects of the Dental Curriculum" and "Clinical Subjects of the Dental Curriculum," more specific aspects of the problem were developed. In consideration of these problems, there was strategically placed before the conference the opportunity for a discussion as to the development of subject matter and teaching procedures. This was covered by Dr. Roy B. Tozier, Professor of Education at Los Angeles State College, from the point of view of general education, and brought home to dental education by Dr. Alton W. Moore of the University of Washington.

Two themes ran through the meeting, expressed with different variations, but nonetheless recurrent. One was that teaching dentistry should be something more than having the student master certain facts and attain certain skills; he should appreciate the responsibilities of citizenship and his peculiar position in the community as a professional man. The other theme was that much has been added to dentistry which we are obliged to teach; at the same time there has not been much which we could conscientiously remove. Thus we come perilously close to the need of more than four years to present it. Obviously it is going to be difficult to embrace new techniques as they arise in dentistry and pass them on to the dental student, and at the same time organize a curriculum so as to make him a more rounded man.

Dental educators east of the Rockies would be pleased to learn that these two problems have been satisfactorily solved in the conference recently concluded, for they are not problems peculiar to the west. The Westerners cannot conscientiously make that claim, but they do believe it was profitable to discuss for three days some of the ramifications of these issues, and it is their hope that these conferences will truly be an *annual* affair.

—WENDELL L. WYLIE

VISUAL TESTS AS A CRITERION FOR THE SELECTION OF DENTAL STUDENTS†

HOUGHTON HOLLIDAY, B.A., D.D.S.,* *New York*
ELEANOR E. KOEPCHEN, B.A.,** *New York*

In any study of aptitude for dentistry much emphasis is placed upon the necessity for mechanical ability, particularly for finger dexterity. In fact, in the rapid transition of the United States from an agricultural to an industrial nation, a larger and larger per cent of the population is engaged in occupations which require more or less mechanical skill. It is recognized that mechanical ability is really a group of abilities, and that there are varying degrees of mechanical ability requisite for various levels of mechanical work. In training for the technical and clinical phases of dental practice we are in the habit of judging a student's mechanical ability by the quality of his work, by its quantity, by the creativeness that enters into it and the judgment he displays in the evaluation of materials, processes, and in the end results.

It is important also that one be temperamentally adapted to his work. Technical and clinical operations may be a real source of satisfaction to one student, monotonous to another and incomprehensible to a third. Also, it is quite evident that success in mechanical tasks may hinge largely upon such factors as dependability, cooperativeness and endurance.[1]

While recognizing the importance of these various factors in the performance of mechanical operations in the dental field, we have, I believe, overlooked the importance of visual performance.[2] For over twenty years we have given an eye test to applicants applying to the School of Dental and Oral Surgery of Columbia University along with other aptitude tests. Our eye test consisted of the usual one for visual acuity at 20 feet, using the Snellen chart, and the test for color blindness using Professor S. Ishihara's book of 32 plates. We were not satisfied with the visual acuity test, for there seemed to be little connection between visual performance at 20 feet and what was essential for the performance of dental tasks at between 8 and 16 inches. In fact, there was often a negative correlation between visual performance at 20 feet and performance grades in technic courses.

---

†A preliminary report of a study by the Admissions Committee of the School of Dental and Oral Surgery of Columbia University.

*Chairman, Admissions Committee, School of Dental and Oral Surgery of Columbia University.
**Secretary, Admissions Committee, School of Dental and Oral Surgery of Columbia University.

In 1949 we became interested in the reports of medical and employee service directors in a number of our large industrial corporations. Physicians and psychologists in the employ of the Sperry Gyroscope Company, [8] the General Electric Company [4,10,11] and others had been faced with the problem of selecting the right man for the right job, made particularly acute by the demands for optimum production during the war. It was necessary to employ large numbers of unskilled and untrained workers and by means of examinations and interviews to place these people in positions where they could function to the best advantage. The tasks that many of these employees were called upon to perform required the same intensive use of the eyes at close range as do the tasks that the dentist performs in his technical and clinical work.

It was found that needed production was being delayed by the failure of a high proportion of employees to acquire skill in particular tasks during their training period. This in spite of the fact that they seemed to have the dexterity and intelligence necessary for the particular job. When it was thought that vision might be a factor, a check of the physical examinations indicated that all had passed the visual acuity tests then in use. This led to a more thorough analysis of visual performance, including the use of the Ortho-Rater.[5]

The Ortho-Rater is an instrument designed to measure twelve visual skills which, in a research program sponsored by Purdue University and the Bausch & Lomb Optical Co., had been found to be related to satisfactory job performance on a number of typical industrial jobs.[6] The Ortho-Rater is not designed to be used by the doctor in making his diagnosis nor to determine the prescription for a correction, but by a trained layman to quickly identify persons whose visual skills are below certain standards. It has been found that a great many people are working with a visual handicap of which they are unaware and which reduces their efficiency in performing their daily tasks. The use of the Ortho-Rater has resulted in the recommendation to many workers that they obtain a professional ophthalmic examination, and in their subsequent visual rehabilitation.[7,12]

In a report by W. Gregory Morgan, M.P.H., M.D., medical director of the Owensboro Tube Works of the General Electric Company, and N. Franklin Stump, M.A., Ph.D., psychologist,[4] it is shown that there was a significantly greater average hourly earning for those operators meeting visual standards than for those not meeting them. These employees were engaged in assembling radio tubes, on a piece work basis, and those who met the visual requirements earned appreciably more per year than those who fell below the visual standard.

In a study conducted at the Bausch and Lomb Optical Company,[8,9] employees who met visual standards had good hourly earning in comparison with those who fell below the visual standard. There was an average difference of $1.096 per day or $6.576 per week.

If visual skills are so important a factor in the selection of employees for industrial tasks of the type we have described, it seemed reasonable to expect that they might be equally important in the selection of students to enter upon training for the profession of dentistry.

We arranged to have an Ortho-Rater at the school and, following the necessary instruction and training in its use, gave twelve visual tests[18] to all of the students then enrolled in the four classes. We have continued to administer the tests to all applicants who were asked to report for an interview. This includes all who are ultimately accepted. At this time we have the results of the tests on the members of seven classes. Some students were lost to us from the early classes because they had been dismissed for unsatisfactory work before we began our testing program. Also, the seventh class, the present first year students, are not included in the study as we do not, as yet, have final grades in any of their dental subjects.

Preliminary computation of the results indicate rather significant correlation between the test scores for several of the eye tests and grades received in dental technic courses and in clinical practice. The results confirm the findings made a year ago on 116 students.[15]

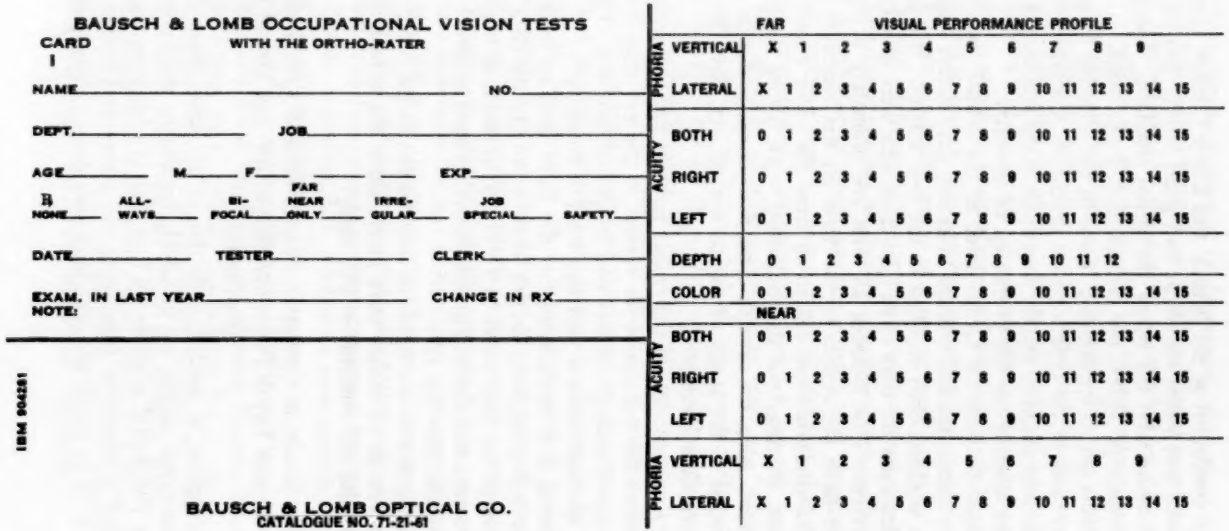
The following is a reproduction of the form used in recording the results of the individual tests. In this study no use of the data obtained on the portion of the card above "DEPTH" is utilized, as it pertains to visual performance at a distance greater than that used in dental technical and clinical work. (*See Fig.* 1.)

The following charts, arranged for convenience in the order in which the five eye tests at 13 inches were given, show the extent of this relationship for the 189 students in this study.

I. *Composite Grades in Operative, Prosthetics and Crown and Bridge Compared with Depth Perception Scores for 189 Dental Students.*

(See Chart I)

Depth perception is graded with the Ortho-Rater from 0, or no ability to recognize depth, to 9, which represents maximum ability. Dividing the 189 dental students we find that 119 have received grades of B– or better in operative, prosthetics and crown and bridge. Of this group of 119, 79 or 66.38 per cent have also made scores in the upper



BAUSCH & LOMB OCCUPATIONAL VISION TESTS

CARD I — WITH THE ORTHO-RATER

NAME _____ NO. _____

DEPT. _____ JOB _____

AGE _____ M. ____ F. ____ ____ ____ EXP _____

B NONE ____ ALL-WAYS ____ BI-FOCAL ____ FAR NEAR ONLY ____ IRREGULAR ____ JOB SPECIAL ____ SAFETY ____

DATE _____ TESTER _____ CLERK _____

EXAM. IN LAST YEAR _____ CHANGE IN RX _____

NOTE:

IBM 904251

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VISUAL PERFORMANCE PROFILE

		FAR														
PHORIA	VERTICAL	X	1		2		3		4		5		6		7	
	LATERAL	X	1	2	3	4	5	6	7	8	9	10	11	12	13	14
ACUITY	BOTH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	RIGHT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	LEFT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	DEPTH	0	1	2	3	4	5	6	7	8	9	10	11	12		
	COLOR	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		NEAR														
ACUITY	BOTH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	RIGHT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	LEFT	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PHORIA	VERTICAL	X	1		2		3		4		5		6		7	
	LATERAL	X	1	2	3	4	5	6	7	8	9	10	11	12	13	14

FIG. 1

half of the scale in depth perception, while only 33.62 per cent of those receiving good grades are found to have poor depth perception.

II. *Composite Grades in Operative, Prosthetics and Crown and Bridge Compared with Ability to Discriminate Colors.*

(See Chart II)

Color discrimination is graded with the Ortho-Rater from 1 to 6, either 5 or 6 being considered a perfect score. Dividing the 189 dental students we find that 119 have received grades of B– or better in

CHART I
Scores made in Depth Perception Test

Composite Grades received in Operative, Prosthetics and Crown and Bridge	0	1	2	3	4	5	6	7	8	9		
A	1							1			2 (1)	
A–				2	3					2	7 (2)	
B+		1		2	3	1	7	6	2	3	25 (19)	
B	2	2	1	2	2	4	6	6	3	1	29 (20)	
B–	1	4	3	2	9	5	10	8	1	13	56 (37)	Sub-total (79)
C+	1	5	1	5	6	2	6	2	1	11	40	
C	2	1	1	1	2		6	1	2	4	20	
C–				2				1	1	1	5	
F		1		1	1		1		1		5	
Total	7	14	6	17	26	12	36	25	11	35	189	

operative, prosthetics and crown and bridge. Of this group of 119, 105 or 88.23 per cent have made scores that indicate they have no color blindness. On the other hand only 11.77 per cent of those receiving grades of B– or better were found to have difficulty in distinguishing colors. This bears out the experience in a study made at the Bausch & Lomb Optical Company,[8] where it was found that there was a definite positive correlation between efficiency in soldering frames for eye glasses and color perception. In the Bausch and Lomb study it was felt that the ability to recognize the correct amount of heat for soldering by the

CHART II
Scores made in Color Discrimination Test

Composite Grades received in Operative, Prosthetics and Crown and Bridge	1	2	3	4	5	6		
A					1	1	2 (2)	
A–					2	5	7 (7)	
B+		1		1	8	15	25 (23)	
B		1		3	11	14	29 (25)	
B–		2	2	4	23	25	56 (48)	Sub-total (105)
C+	1	1	2	5	15	16	40	
C		1		4	7	8	20	
C–					4	1	5	
F				1	1	3	5	
Total	1	6	4	18	72	88	189	

color of the metal might be the determining factor. Perhaps the recognition of the right point for casting may be a factor with the dental student. At any rate there appears to be a definite relationship between ability to distinguish colors and efficiency in technic and clinical work.

III. *Composite Grades in Operative, Prosthetics and Crown and Bridge Compared with Visual Acuity.*

(See Chart III)

Visual acuity is graded with the Ortho-Rater from 0 to 15,[14] 10 being equivalent to 20-20 vision. We had no students with visual acuity scores

CHART III
Scores made in Visual Acuity Test

Composite Grades received in Operative, Prosthetics and Crown and Bridge	5	6	7	8	9	10	11	12		
A							2		2 (2)	
A−						2	2	3	7 (7)	
B+					2	5	9	9	25 (23)	
B					3	13	8	5	29 (26)	
B−			1	1	11	11	17	15	56 (43)	Sub-total (101)
C+	1		2	1	8	12	10	6	40	
C					3	7	6	4	20	
C−					1	1	3		5	
F			1	1	2	1			5	
Total	1		4	3	30	52	57	42	189	

below 5 and none higher than 12. Dividing the 189 dental students we find that 119 have received grades of B– or better in operative, prosthetics and crown and bridge. Of this group of 119, 101 or 84.87 per cent, have visual acuity scores of 20-20 or better, while only 15.13 per cent of those having grades of B– and better in technical and clinical work had scores below 20-20 in visual acuity.

CHART IV
Scores made in Vertical Phoria Test

Composite Grades received in Operative, Prosthetics and Crown and Bridge	X & 1 8 & 9	2 & 7	3 & 6	4 & 5		
A			1	1	2	
A–			1	6	7	
B+		1	4	20	25	
B		2	5	22	29	
B–	3 (3)	9 (12)	11 (22)	33 (82)	56	Sub-total (119)
C+	1	6	14	19	40	
C	3	1	5	11	20	
C–			1	4	5	
F	1	1	1	2	5	
Total	8	20	43	118	189	

IV. *Composite Grades in Operative, Prosthetics and Crown and Bridge Compared with Vertical Phoria Scores.*

(See Chart IV)

Vertical Phoria scores are recorded from X to 9, 4 and 5 being the score that corresponds with the least muscle pull, and X and 9 indicating the greatest amount of muscle imbalance. Dividing the 189 dental students in accordance with the grades received in operative, prosthetics and crown and bridge, we find that 119 students received grades of B– or better. Of this group of superior students in technic and clinical

CHART V
Scores made in Lateral Phoria Test

Composite Grades received in Operative, Prosthetics and Crown and Bridge	X-1-2-3-4 12-13-14-15	5-6-10-11	7-8-9		
A			2	2	
A–	1	1	5	7	
B+	2	13	10	25	
B	11	11	7	29	
B–	19 (33)	17 (42)	20 (44)	56	Sub-total (119)
C+	18	12	10	40	
C	8	9	3	20	
C–	1	2	2	5	
F	1	2	2	5	
Total	61	67	61	189	

work, 82 or 68.9 per cent had scores which indicate little or no vertical muscle strain, 22 or 18.49 per cent had scores indicative of some vertical muscle strain, 12 or 10.09 per cent worked under the handicap of greater vertical muscle strain, and 3 or 2.52 per cent were still able to make superior grades with scores indicating the greatest amount of muscle imbalance.

V. *Composite Grades in Operative, Prosthetics and Crown and Bridge Compared with Lateral Phoria Scores.*

(See Chart V)

Lateral Phoria scores are recorded from X to 15, scores of 7, 8 or 9 indicating the least lateral muscle strain and X, 1, 2, 3, 4 and 12, 13, 14, 15 indicating the greatest amount of strain. Dividing the 189 dental students in accordance with grades received in operative, prosthetics and crown and bridge, we find that 119 students received grades of B– or better and can be regarded as superior students in these technical and clinical subjects. Of this group 44 had scores indicating the least muscle strain, 42 some muscle strain and 33 had scores indicating considerable lateral muscle strain. While there is a slight trend toward less lateral muscle strain on the part of the superior students, the difference is probably not great enough to be significant. At any rate, lateral phoria seems to be less of a handicap in performing technical and clinical dental work than vertical phoria, poor visual acuity, or deficiency in color and depth discrimination.

In general, those students who scored high on the visual tests did well in technic and clinical work. The correlation would undoubtedly be still more striking if a number of students, who obtained poor scores on the visual tests, had not been required to withdraw before they came in contact with the technic and clinical part of our dental curriculum.

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A straight gaze at men may find them thinking. It will find them accepting and rejecting. It will find them acting on the basis of thought. It will find them living in a world where one must find something to which he can be loyal, he must find something on which he can depend.

By Socrates.

GENERAL COMMENTS ON THE CANCER TEACHING PROGRAM IN DENTAL SCHOOLS[1]

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I. Introduction

A review of the progress made in oral cancer training programs is particularly meaningful this year because it marks the fifth year of the program for 31 dental schools and the fourth year for an additional number. This is of particular significance since it means that students in these schools, for the first time, have had the opportunity to benefit from instruction in cancer at every logical step of their four-year dental course. Some measure of the success and value of the program is shown by the fact that all of these schools have indicated their willingness to continue participation in the program. One new school, the Dental School of the University of North Carolina, was awarded a teaching grant in July to make a total of 40 schools now participating in the oral cancer teaching program.

As I have indicated to you on previous occasions the dentist has a unique opportunity to aid in the practical approach to the control of cancer.

The extent of this opportunity is indicated by the cancer survey series of ten representative areas, the individual analysis of which the National Cancer Institute has completed. These surveys, covering the 1947-1948 period, reveal that roughly 15 per cent of all cancer diagnosed each year, fall within the range of the dentist. In these surveys and several recent ones made by states, one of the most notable differences in cancer site distribution is in the buccal cavity and pharynx where as high a ratio as seven cancers in men to one in women is found. An overall summary of the ten surveys will be prepared for publication in the coming year.

II. Trend Toward Uniformity in Teaching Programs

As the cancer training program has grown in your schools and you have learned through experience, and to a certain extent through necessity, where cancer instruction can best fit into your curriculum there has been a growing trend toward a uniformity in your programs, for

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[1]Presented before the Joint Session of Medical and Dental School Cancer Coordinators, Boston, Massachusetts, September, 1952.

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teaching oral cancer. While a few dental schools introduce the subject of cancer in basic science courses in the freshman year, the majority begin instruction in the general subject of cancer in the sophomore general pathology course. Special emphasis is given to oral cancer in oral pathology with some clinical experience during the junior year, followed by more intensive training and actual clinical practice during the senior year in courses in oral diagnosis, oral surgery, and oral medicine. As might be expected, when some oral cancer training programs list as many as 19 part-time instructors, the subject of cancer is also included in such courses as anatomy, histology, biochemistry, pharmacy, nutrition, and prosthesis.

There has been a greatly increased emphasis on training and practical experience in biopsy techniques in nearly all dental schools. A total of 25 schools reported training and practice in these techniques. Eleven schools, having the necessary facilities and staff, had their senior dental students participate in a biopsy service for dental practitioners in their surrounding area or in their state. Of this program, one school said:

"We feel that the biopsy service is an important area of the cancer training program because if the dentist becomes familiar with indications and technic of biopsy, he will be more apt to observe and suspect the early lesions of oral cancer. The several cancer and precancerous conditions which our biopsy service has discovered in serving our clinic and dentists in this area, have proved to us that our biopsy service is a valuable weapon in the fight against oral cancer."

The discovery of unsuspected lymphatic leukemia through a routine blood count on a patient suffering from bleeding from the gingiva has convinced another dental school of the value of their oral diagnosis laboratory which was established in February of this year, mainly for the purpose of determining bleeding and clotting times of all patients admitted to the various clinics of the dental school.

There is a growing interest in a number of schools to include in their teaching curriculum, courses dealing with the social adjustment of rehabilitated patients. In one large school this takes the form of highly specialized training in maxillo-facial techniques in prosthetic restorations; in another, the services of a medical social worker—a public health nurse—supported by the local cancer society were obtained to lecture to dental students concerning problems of rehabilitating cancer patients. This school felt that such information aided their students by supplying them with a background for future handling of patients found to have cancer. There is a growing trend toward medico-dental cooperation in cases of cancer of the oral cavity which this type of instruction will

strengthen by providing knowledge of the complete care of cancer patients.

Another factor that may have influenced the trend toward uniformity in dental cancer training programs is the dental cancer knowledge test. This test, as most of you know, is an adaptation of the cancer knowledge examination prepared at the University of California for the purpose of evaluating the effectiveness of cancer teaching programs in the medical schools of the country. An 80-item pilot form of the test for dental students was constructed and administered first to University of California College of Dentistry students in 1949. The test was administered on a national scale in April, 1950, to students in 13 schools of dentistry. On the basis of findings of this 1950 examination, the dental cancer knowledge test was revised and given in 1951 to students in 28 dental schools and to approximately 8700 students in 30 schools this year. A review of the 1950 testing program appeared in the *Journal of Oral Surgery, Oral Pathology, and Oral Medicine* in October, 1952. Most of you are undoubtedly familiar with this report but because of its importance in evaluating dental instruction courses and its use as a basis for improving the 1951 and 1952 dental knowledge tests, I might review briefly some of the conclusions reached on this first test and borne out by the later ones:

1. The relatively low reliability coefficient for freshmen taking the test reflects the small amount of cancer instruction generally given at that level in dental schools.
2. The distinctly smaller increase in score from junior to senior levels likewise reflects the decreased emphasis on formal cancer instruction during the senior year.
3. The wide range of scores at the sophomore level probably indicates the different instructional patterns of schools where the test was given.
4. At this stage of cancer education, it is still difficult to say how much or how little is "enough" learning of cancer facts and principles for a sophomore, junior, or senior student.
5. A study of the relative extent of learning in one aspect of cancer as compared with another, as reported in the analysis of test results for each class as compared with norms, was forwarded to individual schools to assist in efforts to improve instruction in oral cancer.
6. To summarize—There is a positive progression by class level in each area of instruction on a national basis, with the widest improvement between the sophomore and junior levels. The senior level was not far above the junior level with relative achievement in the upper classes varying considerably between the several areas of instruction.

Dental schools in which the first test was given in 1950, reported that it was received with considerable enthusiasm and interest by their students. Dental instructors felt it was particularly valuable in indi-

cating whether the basic framework of their oral cancer teaching program was enabling them to do an effective job.

III. Increase in Clinical Participation and Services to Practicing Dentists

Clinical training and practice is recognized by all schools as a necessary corollary to lecture and laboratory training in cancer diagnosis. Dental seniors are being given more opportunities to participate as well as to observe in head and neck clinics, dental clinics, and general tumor clinics. While in one school they collect all the information for the case history and present the case to the tumor board of the school, in most schools they observe this procedure, taking part only in the discussion of the case.

Students in 27 schools observe or participate in tumor clinics, while those in one school get their experience in a plastic surgery clinic. The large majority get most of their clinical experience and practice basically in their school oral surgery clinic. Several make use of clinics in their state cancer hospital, VA hospitals in their vicinity, or the state health department cancer detection center. In one school, dental students are allowed to watch major operations, while two others make it possible for them to attend postmortems.

One important clinical activity in which senior dental students are being increasingly used is the establishment of tumor registries. Such a registry is of far-reaching value, not only to the students working on it but also to the practicing dentists in surrounding areas. Both the biopsy service, being initiated at a number of schools this year, and the tumor registry will aid materially in the acquisition of authentic teaching materials for student use.

Clinical observation and participation by dental students in demonstration clinics, tumor conferences, seminars, and follow-up clinics which are opened to graduate students, faculty members, and dental practitioners in nearby areas have been shown to be especially helpful.

Several dental schools training dental hygienists have extended cancer training to these individuals because of their favorable position to observe early lesions in the mouth.

Several dental schools, without access to tumor clinics in the towns in which they are located, spend a portion of their grant funds for the travel of dental students to and from the tumor clinics in nearby cities. Seniors usually serve a short period of resident internship at the clinic before graduation.

IV. Cancer Coordinators and Teaching Staffs

Four schools now conduct their oral cancer training as a separate department, while most of you find it is best fitted into your schools under the committee system. Providing adequate teaching personnel remains a problem, although four schools indicated an increase in their oral teaching staffs for this year. One school, that feels very strongly that grants to aid cancer teaching can be used to best advantage by training teachers in oral pathology, is using one-fourth of its grant to support a selected student in graduate work in oral pathology and surgery at a larger school on his agreement to accept a full-time position on the faculty and teach for not less than two years after completion of his training.

V. Teaching Aids and Equipment

All of you reported large expenditures for new equipment and new visual and training aids. In an effort to give students the fullest picture possible of the cancer problem, nearly all schools have added to their collection of color photographs, color photomicrographs, X-ray and tissue slides, and especially to student loan slide sets. For some schools this has meant purchasing cameras, projection equipment, slide viewers, microscopes, etc., while others needed only film, photographic dark room supplies and less expensive equipment. In order gradually to build files and registries, many schools are establishing pathology laboratories and oral diagnosis laboratories. One school has set up a biopsy punch card service to help in the follow-up training of their dental students.

Training aids vary from school to school. Some are acquiring excellent museums—employing pathology models, moulages, or gross specimens to demonstrate the various kinds of oral cancers. A few schools reported use of a portion of grant funds to enlarge their libraries by addition of both books and journals on cancer.

I know that all of you will be interested to learn that the teaching film on oral cancer which has been so long in production by the National Cancer Institute and the American Cancer Society is again making progress and should soon be ready for distribution.[3]

VI. Postgraduate and Research Programs

Until the students we are now training in undergraduate work get established in the dental profession, we shall have to rely largely upon the dentists now in practice for the early discovery of oral cancer. As

[3]Now available through Cancer Reports Section, National Cancer Institute, Bethesda 14, Md.

I mentioned in noting the completion of our surveys of the prevalence of cancer in ten of our large metropolitan areas, cancer of the buccal cavity and upper respiratory system is increasingly marked by more cancers in males than in females. The fact that women visit their doctors more regularly than men may possibly account for the declining death rate from cancer for women, while at the same time it is on the increase for men. Dentists could possibly be a vital key to improving the rate for males by alertness in detecting signs of possible cancer in their men patients, since men are more apt to visit their dentists regularly than their doctors.

Postgraduate training, therefore, is one of the most important phases of the dental cancer control program. Three-fourths of you have indicated use of a portion of your grant funds to pay for guest lecturers who assist the program both in undergraduate and postgraduate areas. Six dental schools have graduate training in oral surgery which meets the standards of the American Board of Oral Surgery. Another valuable postgraduate activity which a number of schools are developing is the tumor consultative board which operates in connection with the school clinic, and to the mutual benefit of undergraduate students, postgraduate students, and dentists in the surrounding areas. One school conducts a series of 12 seminars for graduate dentists throughout the year. Others conduct two-day refresher courses, usually in connection with annual dental meetings.

Other activities associated with the teaching program, and adding greatly both to creating student interest in cancer, and to the general cancer research program in this country, are the research projects being conducted by the staff and students at four dental colleges. Studies are being made into causes, possible cures, and means of controlling the oral and head cancers which a dentist is most apt to see. For example, one school is producing tumors on saliva-treated and non-saliva-treated skin, and the effect of carcinogens on the cheek pouch mucosa of hamsters. At other dental schools, projects include transplanting of tissue neoplasms to the eyes and salivary glands of animals, studies of the effects of different carcinogens on animals, the transplanting of tooth germ tissue, and the classification of oral tumors.

VII. Summary

I am in complete agreement with many of you who expressed an enthusiastic opinion about the help and encouragement you had received from these annual cancer coordinator meetings. The exchange of ideas

and information has, I believe, been mutually helpful and stimulating. I want to congratulate all of you heartily on your expanding programs and upon the results which are becoming increasingly evident in news stories, scientific publications and by word of mouth concerning the important role the dentist is playing in our efforts to control cancer.

Not only is this training contributing to the health of the Nation but as one school stated—in addition—they welcomed cancer training in their curriculum because it represented a dramatic demonstration of clinical and preclinical coordination on the clinical level—an ideal still being sought in dental education.

Nothing great was ever achieved without enthusiasm.

—EMERSON

CONFERENCE SESSIONS

ORAL DIAGNOSIS

Trends in the Development of Courses in Oral Diagnosis*

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The ready agreement last year to a proposal for restudy of the curriculum in oral diagnosis confirmed, I believe, a very general confusion as to which topics or activities should be considered appropriate to this phase of dental education. There seems to be little consensus as to the direction which a restudy should follow, despite the passage of two decades since the emergence of oral diagnosis as an organized teaching activity. With the Curriculum Survey Committee Report of 1935 as a starting point, however, oral diagnosis should be ready to appraise results, favorable or otherwise, and to better define the optimum scope for its activities.

Review of the literature suggests that attention may have been devoted to methods—especially that old chestnut centralization versus decentralization—at the expense of agreement on the more fundamental problem of what diagnostic instruction should embrace. It seems that until the latter has been clarified, it will remain premature to expect profitable discussion of alternate methods of instruction. Indeed, is it not possible that failure to reach agreement on methods of clinical diagnostic teaching may stem directly from diverse concepts of the scope and content of courses? It may well be that, when the scope of diagnostic instruction can be clarified, how this is given effect will prove of little moment; there is often more than one way of achieving an acceptable result.

Confining attention to the content and scope of the diagnosis course, we find evidence of considerable departure from the syllabus envisioned in the 1935 report, but no sign of any disagreement with its stated objectives for teaching. These objectives appear to have stood the test of time unchallenged. The original course recommendations would therefore seem either to have been poorly related to the objectives which were set, or to have been largely ignored for less obvious reasons. Since the subsequent literature does not tend to invalidate the original basic course recommendations, but rather suggests a trend to branch out

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(sometimes in a far-reaching manner), our restudy may usefully examine various proposed or tried additions.

The 1935 recommendations for course content[1] may be summarized as embracing no more than instruction in the technics of examination, the evaluation of their potential contribution toward a diagnosis, the nature (in detail) of examination findings, the processes by which examination data are interpreted and correlated to develop a diagnosis, and the considerations entering into case study and case management, including systemic aspects of oral infections. It should be noted that there was no intention to offer instruction beyond diagnostic procedures and general phases of case management.

In 1945, a committee of this Association[3] recommended what amounted to tremendous broadening of diagnosis courses, to embrace systematic instruction in the specific symptomatology, detection and differential diagnosis of individual diseases of the hard dental tissues, the periodontium, the dental pulp, disorders of the oral mucous membranes, extra-oral swellings, and so on. This was accompanied by a definite hint that concentration of this teaching away from parent fields such as operative dentistry, surgery, oral pathology, etc., would prove advantageous; and the direct availability of several general analytical tests in oral diagnosis clinics was also recommended. Discussions of this committee report[4,5,6,7,8,9,10,11] reflect a rather mixed reaction, with generous appreciation for an exhaustive collection of data.

Three years later we find considerable difference of opinion[12] persisting about what should constitute oral diagnosis, in a presentation which raised the probing question: "Who could be so naive as to think one division could teach diagnosis for every division in a school?" There was also a timely reminder[13] that the dentist should not attempt to pose as a medical practitioner, just as a physician should not lay claim to ability as a dental diagnostician. In 1951, however, the direct availability of a whole range of systemic laboratory tests was again advocated,[14, 15] with the threatened addition of still more complete and involved tests when dental deans could be won over to the idea.

Last year, on the other hand, one of the participants in the 1945 report is found[20] urging repeated emphasis on the common clinical conditions rather than on rare conditions seldom seen in practice, declaiming time spent memorizing the clinical features of many rare diseases. Again comment persisted[21] that there is no clear-cut outline to follow in accomplishing the desired end, but one writer[22] suggested a course designed purely as training in diagnosis and treatment planning, leaving

the detailed teaching of "mouth lesions, tumors, etc." to the departments concerned. One began to sense a trend more closely allied to the original 1935 recommendations until the same paper went on, in an apparent contradiction, to advocate showing and discussing "mouth lesions, tumors, and other abnormalities" for inclusion in the diagnosis course. It may be more than coincidence that a review of the literature should conclude by quoting, from a paper published very recently, the apt comment[25] that one is overwhelmed by the number of things oral diagnosis has had recommended to it for accomplishment.

There are numerous other issues which have not, it appears, reached the printed record but which we can recognize as familiar themes in informal or personal discussions. The art of clinical recording in dentistry has developed as a direct outcome of the interest prompted in diagnostic instruction in 1935, so that naturally this feature rated only passing mention in the "red book." Formal instruction or activity in the technic of writing case reports received even less mention, but one writer[8] has since deplored the traditional seconding of this teaching opportunity to another clinical department. The nature of the procedure involved in differential diagnosis has generally continued to constitute a very brief and casual presentation. Study of the functional relations of the teeth received scant attention in the 1935 recommendations, although so fundamental to the prescription of treatment in several fields, with patients free from occlusal abnormalities being few and far between at any age level. Some dental educators have favored instruction for dental students in the diagnosis of conditions of the maxillary sinus—at least in the interpretation of sinus films—but there seems little doubt of their reaction to any rhinologist who presumed to offer a periodontal diagnosis.

Much lip service has been rendered to the coordination and correlation of basic science and clinical teaching as a function of diagnosis, but in point of fact it is absent from the original course content and has received little constructive attention[19] since that time. No preclinical course in diagnosis has been formally recommended by teachers, all of whom must be conscious of the need and most of whom appear to have taken the initiative into their own hands. And it seems that no one has gone on record as questioning the traditional separation of roentgenologic technic from lectures and clinical activities in diagnosis; nor of the separation of logically inseparable data—roentgenologic findings—from other diagnostic examination data, through the offering of lectures, seminars, even entire courses, in the "interpretation" of films.

The ultimate test of diagnostic teaching should be the extent to which it carries over into the practices of graduates, and by this token we have to admit that results to date are disconcerting. Standards of oral examination and diagnosis in the average contemporary general practice are only too well known to us. If we may anticipate some excuses, it is fair to say that it will not solve the diagnostic problem facing graduates to bemoan the tongue-in-cheek attitude they will encounter in so many fellow practitioners, to point the accusing finger at eager peddlers of "tooth" charts, or to yield the day to patients who have not had cause to appreciate an adequate diagnostic service sufficiently to be prepared to pay for it. Surely these situations provide the cue for renewed efforts to inspire students to *believe* in what they have learned, despite disparaging dentists, glib salesmen, or sceptical patients.

Belief will best take root in learning directed toward the everyday problems students are going to encounter in practice. We can all agree on a clear duty to so instil habits of painstaking search and logical interpretation that a student will later find himself unhappy to settle for lesser standards. I believe that for this purpose our best hope will be found in the concentration of his learning experience—didactic and clinical—on cases of the kind most likely to come into his office. There is nothing new in urging emphasis on general practice.[2] Teachers may not readily forsake the dramatic and impressive presentation of rarities in favor of such ordinary things as caries, pulp inflammations, malocclusions, periodontal disease, periapical conditions and the systemic relationships of oral infections; but able diagnoses of these widespread afflictions will serve patients generally far better than ability to name, say, a case of Pink's disease. Awareness of a further responsibility will suffice when the occasional unrecognizable abnormality is encountered.

In the appraisal of the everyday cases to which we have referred, learning is likely to carry over best when it is based on a realistic type of case study genuinely applicable to favorable conditions of office practice. To this end we may do well to present systemic laboratory tests and general physical studies from the same approach that we can reasonably hope the graduate will follow. Of another aspect of case study —clinical recording—possibly the less said the better, for our teaching has often become so utterly unrealistic that any follow-through into office practice is literally impossible. I am convinced that there need be no fundamental incompatibility between good recording procedure in teaching and good recording procedure in office practice. I am equally convinced that we must teach the student by example a recording

procedure so adequate yet so effective that he will *want* to continue it in his office. Then, and only then, will he find it easy and natural to continue the standards of diagnostic activity we have sought to encourage in him.

I have gained the impression that the content of our diagnosis courses, and some of the activities in diagnosis teaching, seem to have strayed far in an unrealistic pursuit of the ideal. The urgent need is for the effective carry-over of basic diagnostic philosophy into practice, and in reconsidering the course content we will enhance our opportunity if this is kept in view.

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Should Roentgenology Be Incorporated as an Integral Part of Instruction in Oral Diagnosis*

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The one qualification which I possess that led the program committee to request me to dicuss this particular topic is that I am a teacher of neither oral diagnosis nor roentgenology and am, therefore, presumably free of bias toward either. Whether or not this constitutes an adequate qualification is perhaps debatable, but I assure you that I am pleased to present my attitudes toward this interesting problem.

At the outset I wish to state that the comments which I shall make are based on no particular dental school nor any individual curriculum. I have had the opportunity of observing the teaching of oral diagnosis in several schools and of discussing this area of instruction with a large number of teachers. From these experiences I shall proceed to outline my own conclusions, pointing toward the goal for which I believe we should strive and recognizing at the same time that individual problems of faculty and physical facilities many times prevent the immediate attainment of the ideal.

One of the principal reasons that we are still considering whether roentgenology should be a part of oral diagnosis is to be found in the history of dental curriculum development. In the 1935 report of the Curriculum Survey Committee of the American Association of Dental Schools, the following statement was made indicating the status of oral diagnosis:[1]

"It is generally recognized that the weakest link in dental education today is the instruction in diagnosis and treatment planning. Very few dental schools offer special courses in this subject; the teaching of the subject is usually divided among the several clinical departments, each giving attention to those phases of diagnosis and treatment planning that appear closely related to its particular service. Insufficient attention is generally given to adequate diagnosis and prognosis as the basis of rational treatment, with the result that the student is apt to acquire a superficial idea of correct diagnostic methods and the part they play in dental service. Undoubtedly, the all too frequent emphasis on the mechanics of restorative service is responsible for this lack of concern with instruction in diagnosis."

Elsewhere in the same report the topic of this paper was brought out as follows, in an outline of instruction in radiography:[2]

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[1]American Association of Dental Schools, Curriculum Survey Committee: A Course of Study in Dentistry, Chicago, Ill. (311 E. Chicago Ave.), American Association of Dental Schools, 1935; p. 219.

[2]*Ibid.*, p. 214.

"Instruction in radiography for dental purposes is definitely related to instruction in diagnosis because radiographs are important diagnostic aids. This close relationship raises the question whether the interpretation of radiographs should be taught in the course in diagnosis or in the course in radiography. The outline of instruction has been prepared on the presumption that the recognition in radiographs of the signs of diseases and disorders of the teeth and their contiguous parts should be taught in radiography and the value, limitations, indications, and application of radiographs as diagnostic aids should be taught in the course in diagnosis. Radiography, as the term is used in this report, is the art and science of making and interpreting radiographs of the teeth and adjacent structures, while diagnosis is the correlation of all obtainable evidence (clinical, radiographic, laboratory) to determine the conditions present."

This statement reminds us that the problem we are discussing is not a new one, yet it has not been wholly solved. Had the courses in oral diagnosis and roentgenology been introduced into dental curriculums at the same time, I feel that they would have been joined at once into a single program on instruction. Unfortunately, attention became focused upon the teaching of oral diagnosis as an entity only after roentgenologic departments were well established. Each clinical department in most schools had long cared for the didactic and clinical aspects of diagnosis pertaining to that field of dentistry. This led, of course, to repetition, contradiction, and, sometimes, omission. The consolidation of the instruction fundamental to all departments became necessary in order to improve teaching efficiency and to help students to consider patients as whole human beings and not as so many inlays, bridges, etc. How completely this had been done as of ten years ago is indicated by a statement from the report made following the last survey of dental schools. It was said:[8]

"Diagnosis and treatment-planning—it is the solemn truth—are too frequently mere words in a catalogue. And when an efficient and thorough process of diagnosis and treatment-planning is established, its findings and directions are frequently overruled by other departments, which parcel out the patient to meet their clinical needs. Good workmanship—which happily is characteristic of American dentistry—whether it be in a partial or full denture, a fixed or removable bridge, the treatment of a pulp canal, a filling, or an extraction, appears in the schools to take precedence over the particular human being who may at the moment be the subject of treatment."

I quote this statement not to condemn the advancements which were made up to 1943, but to indicate that attention has only been focused upon oral diagnosis departments within recent years and to point out that we are still in a period when thought must be given to the final content and organization of such departments.

It is my belief that the term "Oral Diagnosis Department" is a misleading one and that most of us would agree that much more must be

[8]Horner, H. H.: Dental Education Today, University of Chicago Press, 1947; p. 315.

included within its scope than the name indicates. Certainly no one can make a diagnosis unless he has first made an examination and has considered the treatment and prognosis. To my mind, a wordy, but more definite, name should be applied to this portion of dental teaching. I would term it a Department of Oral Examination, Oral Diagnosis, and Treatment Planning.

From the simple renaming process, it follows that roentgenology or at least the interpretation of roentgenograms should be a part of this department. From a teaching standpoint I believe that the best situation would be one in which all roentgenographic activities and the Department of Oral Examination, Oral Diagnosis, and Treatment Planning were combined under one administrative head. In most instances such an organization would not change the activities of the various teachers except at an administrative level. Men who now teach roentgenology or oral diagnosis should continue their instruction on a cooperative basis and together determine the proper planning and timing of subject matter, so that the student may obtain the maximum benefit. An excellent radiologist who has taught x-ray interpretation for years should not discontinue his teaching, but should fit it into an over-all pattern of instruction in oral diagnosis.

When x-ray interpretation is taught as a separate and independent entity within the dental curriculum, there is a tendency to encourage students and dentists to make diagnoses on the basis of x-ray examinations only. To my mind it is just as undesirable to encourage the student to depend too heavily upon an x-ray examination as it is to have him fail to realize that x-rays form an integral part of any oral examination. Today too many dentists may be found who either make their diagnoses almost entirely from x-rays and neglect other phases of oral examination or, on the other hand, fail to make more than single films of areas about which patients complain, utterly ignoring the use of x-rays as part of a complete examination. Our teaching programs should lead students through a carefully planned procedure of routine examination for all patients and x-ray examination should have its definite, important place in this procedure. It is only a matter of good teaching to attempt to correlate and integrate for the student, instead of leaving him to his own devices.

An ideal teaching program would be one in which a student would make the roentgenograms of each patient for whom he would make an oral diagnosis and treatment plan. Nothing can do more to vitalize radiographic technic for a student than the knowledge that he must use

and intepret the films which he is exposing. Carelessness invariably is introduced when the student knows he will not actually use the x-rays and may never see the patient again. The assignment of students to the radiographic department for an allotted period of time frequently suffers from this lack of interest.

It follows that all retakes of films should be done by the student who took the original. This does not happen in many schools today and the student is not often confronted with the mistakes which he made. He also is not shown the method by which the correction is made in the retake.

At the moment students in some schools make only a few roentgenograms, almost all such work being done by technicians. At the other extreme are some schools in which the students are making practically all of the roentgenograms which they use, but are doing this work with virtually no supervision. Ideally every student would examine each set of films which he makes, and do so in the presence of the patient and a teacher. This is prohibitive in most schools and a compromise must be reached for the majority of schools in which the student makes an adequate number of roentgenograms, is carefully checked on them, and sees the patient with them. This should best be done in the area of instruction known as diagnosis.

One problem common to a number of dental schools is that of patient admissions. Delays are frequent for the patient from the time he originally visits the school until he is assigned to a student for treatment. Often the student has also spent some time waiting for such a patient assignment and the obvious conclusion is that a bottleneck exists in the admission procedure. Quite frequently the difficulty appears to be in a lack of unity between the oral diagnosis department and the radiographic department. In at least a few schools this problem has been overcome by the appointment of one teacher to plan and administer the two departments. Such unification of purpose has led to a smoother flow of patients through oral diagnosis to the students.

As previously stated, the physical facilities and the faculty problems of many schools will not allow the attainment of the objectives I have outlined. Ultimately, perhaps, we all may arrive at a situation satisfactory to our teaching needs. The reasons which have been given for an integration of oral diagnosis and roentgenology are not new ones, but they must be solved if we are to give the student the maximum benefit of his educational experience. Each school must meet this situation to its own satisfaction and no single pattern of organization will,

perhaps, be applicable in all instances. The fundamental problems pointed out, however, are common to all.

A Preclinical Course in Oral Diagnosis and Treatment Planning*

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One of the major problems confronting the present-day dental educator is the adequate transferral of his material to the student. It is felt that intellectually speaking our prospective professional men are products of the "Comic Book" era. Many of them have developed a "Mickey Mouse" mentality. They appear to expect entertainment rather than instruction; the prepared syllabus and lecture outline rather than meticulous notes along with the information gained from their organization. The intensive use of audio-visual aids in didactic courses must not be depricated but only too often time spent in the lecture hour closely resembles that spent in the local movie palace with its attendant drowsiness and lack of responsibiltiy. The sudden presentation of a startling color slide of some vague, seldom seen disease; the repetitious insertion of slides carrying comic remarks; the frequently planned remembrance of some choice anecdote all tend to provide the student with the same comic relief he has come to expect and anticipate in the theatre and before the television screen.

In the opinion of the writer the present-day student is the product of his environment. He has been allowed to "develop his personality" as a child rather than taught acceptance of responsibility for his acts. He has been allowed to graduate from grade and high school under the anonymity of a grading system that provides little incentive for personal perfection, or the humiliation in detection of apparent ignorance. He has been presented with so many examination papers of the true and false or multiple choice variety, which offer him better odds than he could expect at any "track" in the country, that he can no longer be expected to express his views in logical, well thought out English or to even spell correctly the common words appearing in his basic science courses. Few examiners adequately strike off marks for erroneous spelling today even though this error on the part of the student is tacit proof of his lack of concentration on and responsibility for his reading.

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Character is mainly built through suffering and the present-day dental student does not appear to suffer unduly.

By now you are no doubt wondering what prompted the above display of emotion. Burket, Burrill, Ginn, Thoma, Mead and numerous others have stressed the great need for the instilling of a deep sense of responsibility in the student. This is particularly so with respect to a course in oral diagnosis. As diagnosis is of little value when separated from treatment the following will be devoted to the considerations of a course in oral diagnosis and treatment planning at the preclinical level. In an attempt to overcome some of the student lethargy mentioned previously and to fully develop a sense of duty to the patient such a course must embody active student participation. It is generally accepted in educational circles that more is gained from what is read than from what is heard; from what is seen than from what is read; and from what is done than from what is seen. The student must meet his patient and be required to see and do!

The policies, activities, and geographic locations of dental schools are extremely varied. The physical plants of no two institutions in the country are similar. The philosophy and economic status of the area in which the place of learning is situated greatly effects the procedures employed. For these reasons there is little value to be derived from a hypothetical course of instruction applicable to all schools. This paper will therefore deal with a situation already suggested and of practical application to the School of Dentistry, University of Washington.

We are all in agreement on the desirability of having the dental student render complete treatment to each of his patients. Unfortunately a situation arises in many institutions where a decision must be made as to the policy of the school. Is the purpose to adequately instruct the undergraduate in each of the several fields of the profession, or is it to render a health service to the public? As stated, it is desirable to accomplish both. However, the bogy of clinical requirements, and a consideration of the qualifications necessary to graduation frequently demands a system of unit-point evaluation. In other words, a student may be required to adequately insert 10 porcelain jacket crowns, 65 amalgam restorations, 35 gold foil restorations, so many units of fixed bridgework and so on. Besides a flexible unit requirement he is obliged to acquire a certain number of points, allowed to compensate for the varied extensiveness of different operations. It is difficult to visualize a situation in which each student possesses just the correct number of patients with just the correct amount of required work. It will be

found that many patients are transferred from one student to another for various types of work and that the operator making the original examination and treatment plan does not necessarily complete that plan in its entirety. It may be possible by this method to render excellent service to the patient but we must not delude ourselves into believing that all our students are personally carrying their own original treatment plans through to completion. The following plan provides for one difficult case at least, to be carried through the clinic by the individual student while still allowing him to meet his specific requirements, the assumption being that the philosophy of rendering routine service to all patients is not reconcilable with a unit-point requirement.

Thoma and Mead agree in their texts that the prerequisite to intelligent diagnosis is correct theoretical training and extensive clinical experience. The problem then is not only to present the student with sufficient clinical experience within the present curriculum but also to imbue within him a sense of deep responsibility to his patient and to so apply his previous training in the basic sciences as to firmly instill within his mind their practical application to the clinical fields. It is quite possible that a preclinical course in oral diagnosis and treatment planning could hold the answer to this vexing problem, particularly if active student participation were employed. It would be preferable to have facilities for the second year student where he could follow up his didactic course in an orientation clinic. Here he could prepare an actual case to be completed according to plan during his clinical years. This would be considered his "Special Assignment" and would be over and above his regular cases assigned during the third and fourth years.

The didactic course could well be given during the second quarter of the academic year. It might utilize a series of eleven one-hour lectures and demonstrations. This could replace one-quarter of lecture usually given during the third and fourth year. The purpose of the course content should be to acquaint the student with the various methods by which his recently gained knowledge of the basic sciences may be utilized in evaluating the patient for diagnostic purposes. He might be taught to consider the face and the oral cavity as an integral part of the body mechanism and as the video-screen of the personality. From it he must learn to perceive the subtleties so necessary to intelligent investigation. Suggested prerequisite subjects aside from the usual preclinical courses in operative dentistry, prosthodontics, periodontia and so forth could well be; dental materials, gross, neuro and oral anatomy, physiology, biochemistry, microbiology or bacteriology, and oral roentgenology.

Instruction should be given in performance of the simple diagnostic tests such as white and red blood count, clotting and bleeding time and the detection of sugar through urinalysis. These are mentioned because they will be performed by the student for his patient in the laboratory course the following quarter. The most common diagnostic tools and procedures should be stressed along with a consideration of the more common signs and symptoms of oral disease. It is felt that detailed instruction in clinical differentiation of the various conditions of the mouth is received more intelligently by the student after he has had clinical experience and should be given preferably during the fourth year. At this time instruction in school, administrative procedures, charting, mouth examination and patient management could well be given along with consideration of the various restorative materials, a review of their properties, indications and contra-indications. The course in dental materials has preferably been covered in the early part of the first year but the student is now in a position to appreciate its practical application in his treatment plan. In this connection fundamentals of treatment planning and the use of study models should be covered in preparation for the ensuing quarter.

Clarence O. Simpson in his text "Advanced Radiodontic Interpretation" has stated that approximately 80 per cent of pathology of the teeth and their supporting bone structures can be interpreted from adequate roentgenograms. An adequate course in oral roentgenology is therefore a necessary prerequisite to any course in oral diagnosis. This could well be given during the first quarter, either by a separate Section on Roentgenology or under the direction of the Department of Oral Diagnosis.

The latter being the case the course on roentgenology could be confined to a didactic consideration of technical procedures in conjunction with laboratory experience. Interpretation and diagnosis could then be covered in the following course. Roentgenographic interpretation, although of inestimable value, has purposely been given last consideration, for the student should be taught to think analytically and to realize that in most instances his roentgenogram should support his diagnosis, not provide it. It is felt that too many students are inclined to rivet their attention on an apparent radiolucency without thought to adequate history and interrogation.

By now the preclinical student has been introduced to the basic principles and procedures in oral diagnosis but has yet to meet the patient. This is achieved during the third quarter through attendance

in an orientation clinic course composed of 20 periods, each of three hours duration. This procedure offers opportunity for other interested clinical departments besides that of oral diagnosis to institute preparatory procedures during the latter part of the second year. Other departments would be most interested in actual preliminary clinical experience for this group while the Department of Oral Diagnosis, working in cooperation with them, introduces the student to his first patient.

During the previous quarter the Department of Oral Diagnosis will have screened, registered and photographed a sufficient number of cases to supply the course—one patient to each student. If at all possible patients requiring a removable prosthetic appliance in conjunction with fixed bridgework and with whom aesthetics is a problem will be given preference. The cases will be assigned and the student required to arrange his own appointment with the patient, expose a complete oral roentgenographic survey, take study models, take clotting and bleeding time and make a red and white cell count. If practical, a urinalysis for sugar will also be included. These clinical tests could be arranged through an established Section on Oral Medicine or through laboratory procedures in the Oral Diagnosis Department. It is not felt that such procedures should play a routine part in dental practice but the actual performance on this one specific case will etch the procedure and its wisdom indelibly on the student's mind.

Upon the completion of these tests a thorough prophylaxis will be given, a history taken and the mouth examination undertaken. The student will then make out a tentative plan of treatment and make an appointment with the Oral Diagnosis Department for confirmation where representatives from each department concerned will meet on specific days to evaluate and re-arrange the plan where necessary, explaining to the student who is yet preclinical, the reasons therefore. It would not be necessary for each department to do other than agree in principle on the treatment plan for during the third year the student would be required to complete his detailed analysis with each section. Upon approval of the treatment plan the patient's chart will be returned to the files to await assignment. The student who performs this work-up will be required to follow the case to completion under the departments concerned prior to graduation. The clinical procedures enumerated would take but a small portion of the 60 hours available and provide the other departments further use of the student in their specific orientation procedures.

Dental educators have been deploring for years the lack of routine service to the patient in their institutions. This is a commendable ambition and indeed a highly desirable situation with some schools apparently solving the problem. However, as stated previously, philosophies vary and patients who do not present the specific types of operations expected of the student become an added burden he must shoulder over and above the meeting of his requirements. Perhaps we should do away with unit-point requirements entirely and teach the student service to the patient. This could result in the student becoming well trained in one field and yet completely at a loss in another. It might well be that extension of the present curriculum be considered in order to compensate for the added time allotted instruction in the rapidly expanding basic sciences.

This plan, which certainly is not a new conception, does however introduce the student to practical oral diagnosis and treatment planning at an early stage in the curriculum. It allows him to not only plan and execute a difficult case but to also meet his specific clinical requirements. Cases requiring increase in facial dimension and those where extensive oral rehabilitation is necessary may be handled at the undergraduate level. In some schools such cases are considered to be of unsatisfactory routine teaching value. The dental student will be in a position to evaluate the progress of his case and to compare his pre and post operative photographs and his results.

The Department of Oral Diagnosis will compile a never-ending reserve of completed cases, complete with case history and all records for use as teaching aids in its clinical and seminar courses. The fact that these cases were planned by mutual cooperation of all interested departments will go a long way towards cementing intersectional good will and establishing the realization that a certain degree of course content overlapping is not only necessary but excellent teaching procedure.

The patients who have been the recipients of this treatment will be vociferous in their approval, for too few of them find such service available within their limited means. We must, as dental educators, bend all our efforts towards inspiring the student to render as great a service to the public as possible. If we can establish this philosophy there need be no fear of the advent of state control over our profession. We must graduate dentists, men fully trained in all aspects of the general field, not tooth carpenters.

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The Place of Systemic Studies in Undergraduate Instruction in Oral Diagnosis*

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The report of the Curriculum Survey Committee of the American Association of Dental Schools, published in 1935, contained a detailed outline of a course in oral diagnosis.[1] The committee recommended inclusion of such a course in dental curricula.

Over the years since 1935 much has been said on the topic of a course in oral diagnosis. There have been discussions on what it should include, when it should be taught, by whom and by what methods. It has been evaluated and re-evaluated. Now we are having another look at the problem, and perhaps it is well that we should.

All of dental education, including oral diagnosis, needs to be progressive, dynamically progressive. To accomplish this a course can not remain static, no more than can the overall philosophy of dental education. There must be modification. But let us not lose sight of the fact that modification and improvement are not necessarily synonomous terms.

With respect to the value of instruction in oral diagnosis there is general agreement to the extent that all schools have included in their curricula didactic and clinical instruction in one form or another. It cannot be said, however, that working harmony exists on methodology or course content. There ought to be a common willingness to agree that there are several methods whereby adequate instruction in oral diagnosis may be given. The point remains controversial because there is no concensus on what constitutes "adequate instruction."

Of primary importance in determining the instructional adequacy of a course is the extent to which that course meets its objectives. When there is universal agreement on the objectives, then achievement of

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adequate instruction will be governed by the competency of teaching personnel, by space and equipment factors, and by the flow of clinic patients. But complete agreement upon educational objectives does not always exist. When this is true, as is the case with oral diagnosis, then the interpretation placed upon "adequate instruction" varies from school to school, depending on the attitude of the school's faculty, or administrative body, toward the relative importance of the subject with respect to the whole area of dental education.

It is generally agreed that oral diagnosis neither can nor should be divorced from a consideration of the patient's general state of health.[2] It is also known that a diagnosis can be reached only as the result of an analysis and evaluation of all pertinent diagnostic data. If we concede these statements to be true, then we must admit that, for competent instruction, as many pertinent tests as possible should be available to the diagnosis clinic. This is not the controversial point. Matters upon which there is no apparent unanimity of thought concern the persons by whom the tests are to be performed and the extent to which the student is to be trained in laboratory technics, test evaluation and physical diagnosis.

There are those who believe that dental students should be rather extensively trained in clinical and laboratory diagnostic procedures, and that the procedures should be made a part of general dental practice.[3] Fisher[4] believes that "it is essential that the dentist be thoroughly familiar with the performance and interpretation of the more routine tests of urinalysis, hematology, biopsy technique and the like," and that "he be familiar with the interpretation of some of the more involved tests such as for serum calcium, phosphorus and phosphatase levels."

There are others who agree that pertinent tests should be available; they are not so certain who should do them. Ziskin et al.[2] acknowledge "some difference of opinion in regard to the propriety of the general physical analytical tests in the dental clinic." They indicate that pertinent tests should be available, that the diagnosis of somatic disease is the province of the physician, and that the dentist should be equipped to know what laboratory aids are available and which ones are indicated. Darlington[5] states that "there may be some question, at times, as to whether the dentist can best make some of the tests, but there can be no question as to the necessity for his knowledge of their evaluation and interpretation. The dentist should at least be familiar with (1) the method of obtaining material, (2) principal of the test, and (3) what conditions may be revealed."

It has been stated that since students have learned how to conduct certain tests in biochemistry or in bacteriology, they should go on to actual performance of those tests in clinical practice. The statement is unquestionably true if performance of the tests is looked upon as an educational discipline. If performance of the tests in the clinic is for the purpose of indicating to the student that he is qualified to perform them in his practice, and that he should do so, the validity of the statement may be questioned. It does not necessarily follow that the performance of tests in the oral diagnosis clinic makes it advantageous or desirable for the dentist to do such tests in his own office. Knowledge about the procedure for making a test is important, just as knowledge about certain laboratory procedures in crown and bridge or prosthetics is important. But in neither case is it always wise or expedient to fail to make a referral to where the test or procedures can be done by more experienced personnel.

It has been said that cost of instruction and non-productive time are factors inhibiting the development of interest in oral diagnosis.[6] In considering the extent to which students should be trained in the performance of systemic studies, and the extent to which our students should be advised to conduct such tests in practice, we might give some consideration to these same factors. Considering cost of equipment, relaibility of technic, and proficiency in interpretation, should we not give thought to the extent to which such procedures can be productive in a general practice?

A review of dental college catalogues indicates that some schools offer a course in principles of medicine or internal medicine. In fact, such a course consisting of 32 hours of lecture was recommended for inclusion in dental curricula by the Curriculum Survey Committee. It was stated that such a course should "teach the student to comprehend the relationship of general disease to the problems of the practice of dentistry, rather than to develop in him the ability to make a diagnosis or to institute treatment for a disease."[1] In some instances these courses have been expanded to include clinical instruction in some phases of physical examination and diagnosis. In a few instances senior students assist in a medical examination and thereby "acquire additional experience in physical diagnosis with special reference to the cardiovascular and respiratory tract."[7]

A critical analysis of these courses is not within the province of this discussion. However, because there is a very close inter-relationship between systemic studies in oral diagnosis and physical examination

and diagnosis, it is considered proper briefly to comment on them.

In those schools fortunate enough to have a staff trained and experienced in the practice of medicine, instruction in medical examination and physical diagnosis is undoubtedly worthwhile. Such instruction is valuable as an educational discipline. Its realistic and productive value must be determined by each school according to the relative importance placed on such instruction.

Certainly, registration as a medical student is not a pre-requisite for learning how to use a stethoscope or a sphygmomanometer, or how to examine by palpation. But I am not convinced that such knowledge, coupled as it must be with very limited clinical experience, qualifies the dentist to do physical examinations in his own office. I question the propriety of an examination of the cardiovascular and respiratory systems by anyone not well trained and experienced in the medical sciences.

We have an excellent laboratory at the University of Iowa and it is staffed with well trained personnel. While it was designed primarily for teaching and research in pathology, it serves excellently as an adjunct to the Department of Oral Diagnosis.

Dental students at the University of Iowa receive instruction in some phases of clinical and laboratory diagnosis. They are taught the technic of biopsy, how to make blood pressure determinations, how to do a simple urinalysis, how to test for capillary fragility and for bleeding and clotting time. They are instructed how to do a red and white blood cell count, including a differential white count, and we strive to develop a reasonable understanding of the interpretation of this test data.

In our oral diagnosis clinic the need for systemic studies is determined on the basis of the medical history of the patient and our findings at the time of examination. When systemic studies are indicated the student to whom the patient is assigned first completes a requisition for laboratory procedures. On this form he writes a brief history, describes the clinical findings and indicates what tests he thinks are necessary. When the requisition has been checked and signed by an instructor, the student takes the patient to the laboratory where he assists with the tests. The test findings are finally checked by an instructor. The laboratory report is then returned to the diagnosis clinic where the same student has an opportunity to correlate it with the history and clinical findings.

At this point it should be stated that our patients are not arbitrarily referred for systemic studies. The need for such studies is always explained to the patient, and the patient is advised that we have facilities

for doing them. If the patient is under the care of a physician he is advised to return to him for the necessary examination. If he is not then receiving medical attention, but indicates a preference to visit a physician, he is urged to do so. In either instance the physician is furnished with pertinent information concerning the case.

In our oral diagnosis clinic we do not make a medical diagnosis. We believe that the diagnosis of a somatic condition is strictly without our domain. If, for example, a patient with an unresponsive periodontitis is found to have a 4-plus glycosuria he is informed only that his trouble is probably not entirely local. He is told that, in our opinion, he should have a complete medical examination. When a patient who has not had a recent medical examination is found to have a dangerously high blood pressure he is advised to see his physician. Findings are recorded on the patient's record but he is not told that he is hypertensive. We believe that at no time "can the laboratory test take the place of a medical examination when signs suggest constitutional disorders."[8]

In oral diagnosis we do not give the student the idea that he is a qualified diagnostician. We do not let him believe that he is presently qualified to perform and to interpret on his own, all the tests used in our clinic. We stress the importance of skill and experience, and the need for additional knowledge and training, before there can be reliability of performance and validity of interpretation. We want him to be "trained to the point of recognizing clinical problems when they exist" and we expect him to be "fully as cognizant of his limitations as of his capabilities in meeting them."[4]

It is important to teach the student to be familiar with the more common tests, with their performance and their interpretation. He should know how to requisition necessary laboratory service and how to prepare, in a professional manner, a request for consultation. Above all, he should be able to discuss intelligently the current scientific concepts concerning the relationship between oral and systemic disease.

I strongly believe that we should teach the students the importance of the closest possible cooperation with the physician. A satisfactory working interrelationship between dentist and physician is usually of great benefit to both, and, in turn, to the patient. Whether this can best be accomplished when the dentist sets himself up as a qualified laboratory diagnostician, and whether or not it is realistically sound for him to do so, are matters for careful consideration. It is my present belief that a general practitioner, especially one located in a small community, will

do well to use the services of the physician to the best possible advantage to himself and his patient.

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Duplication and Overlapping of Instructions in Oral Diagnosis*

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It is apparent that little progress has been made in advancing the subject of oral diagnosis and treatment planning to a position it merits in the undergraduate program in dental education. It has been pointed out that the subject deserves a high position among the clinical disciplines in dental education. In 1944, O'Rourke[1] gave oral diagnosis a weighted value of eight as compared to twelve for operative dentistry and twenty for prosthetic dentistry, and the Curriculum Survey Committee viewed the subject as the "core of the dental curriculum." Yet, "it is generally agreed that the weakest link in dental education today is instruction in diagnosis and treatment planning."[2]

It is not my purpose to discuss the factors responsible for this situation, for they have been brought to the attention of this group on several occasions. The fact that the subject is of major importance in the preparation of a young man for the practice of dentistry in an effective and efficient manner is cause for our concern, especially those of us who have been given the responsibility of teaching students in this area of the curriculum.

It matters little whether the so-called centralized plan or the decentralized plan is used in teaching oral diagnosis. The important

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consideration is how well the task is being accomplished. It has been stated that in the final analysis, should we not concede that there are various methods by means of which adequate instruction in oral diagnosis and treatment planning may be given. We should keep in mind that we are training students to practice dentistry in an adequate manner. As suggested by Freeman,[8] "The dental student is in training to become a practitioner and while a few will develop a keen interest in science and research, the principal body of students will spend their lives in serving the practical needs of their patients. It is our responsibility to weave into the pattern of daily clinical experience as much as possible of the sciences he has been taught, and make each clinical operation a meaningful application of scientific knowledge, rather than a repetition of a technical procedure."

It is generally agreed that a formal well-organized course in oral diagnosis and treatment planning should be included in the curriculum. This course of formal instruction should serve as a means of explaining the principles and methods involved in arriving at a correct diagnosis and treatment planning. It should be the purpose of this course to be certain that the student acquires a complete picture of the methods and procedures available for study of patients. The student should be taught how and when to make laboratory tests, and he should be required to perform these tests often enough to be thoroughly familiar with the techniques involved.

A definite understanding should be reached with the departments teaching the various phases of clinical dentistry as to the scope and objectives of the formal course in oral diagnosis. This would relieve these departments of the responsibility of giving routine instructions in methods and principles involved in the correct examination of a patient. Each teacher should be familiar with the subject matter included in the course, so as to avoid unnecessary repetition of ordinary routine procedures.

Conflicting concepts in teaching the various phases of the subject should be avoided since there will be of necessity an overlapping of the subject material presented by the diagnosis and other departments. Burket[4] suggested that the following points should be emphasized in presenting the subject to the students:

"1. In oral diagnosis, our unit of treatment is the total patient and not the single tooth,
"2. There may be many forms of treatment but there is only one correct diagnosis, and
"3. Comprehensive diagnostic procedures furnish information to the dentist and education to the patient."

The oral diagnosis clinic may be used as a laboratory where students gain experience in utilizing the various methods in arriving at a diagnosis and a tentative plan of treatment. At the very beginning, it should be emphasized to the student that the plan of treatment is only tentative and is subject to change by the various departments which will render the service. In most cases only one or two departments will be involved in treating the average case. In the more complicated cases many departments may be involved. In these cases it is suggested that a practical plan to follow is to assign the case to a student who will perform the work. He studies the case and records a treatment plan in some detail. The student then takes his patient for consultation to the other clinical departments that may be concerned in his projected plan of treatment. An instructor in each department reviews the case and the suggested plan of treatment with the student and either gives his approval of the work to be accomplished in his department or questions the proposal, in which case a consultation with the departments concerned is held and an agreeable decision reached. After the student has secured the approval of all the departments that will be involved in the treatment of the patient, he returns to the department in which the first step in the treatment is to begin.

While it may seem that considerable time is consumed by the student in taking the patient from one department to another for consultations, he has received individual instructions in the whys and hows of treating his patient. Even by this method the student gains too little experience in diagnosis and treatment planning. This is a repetition, to be sure, but he gains the benefits of individual instruction and, perhaps, several approaches to the same problem. When differences of opinion exist among the departments he receives the benefits of the discussions that may ensue. He gets to know his patient, the problems that the case presents, and he should be able to visualize the solution of the problems in the light of complete treatment. The end results as a teaching procedure are better accomplished through these channels than they would be by working with patients where the treatment plan had been completed and handed to the student to execute the treatment.

This approach to the teaching of oral diagnosis and treatment planning has been criticized as too much repetition and duplication of time and effort on the part of the teachers and students alike. However, "practice makes perfect" is a time-honored adage of much truth, and it may well apply here in reaching the desired goal. Some psychologists tell us that learning consists essentially of attaching new stimuli to estab-

lished responses by means of repetition, or they emphasize drill as an important teaching method. If the process of repetition is not an acceptable method in dental education, why do we require 50 amalgam restorations or 25 inlays for graduation? It has been recognized that it is much less difficult to teach a student the standard techniques in dentistry than to teach him to make an accurate diagnosis and develop an acceptable treatment plan.

The treatment planning for dental patients is almost as variable as personalities, and for that reason the fear of too much duplication is not an important consideration in teaching the clinical phase of the subject. It is not an exact science, and for that reason it becomes a matter of clinical experience and mature judgment in the final analysis.

The practice of dentistry is built upon the various problems presented by each patient and in the solution of these problems. The various disease conditions to be diagnosed, the etiological factors involved, and the economic and emotional status of the patient introduce such a complicated group of factors that the student is at a loss, in the beginning of his clinical experience, to know where to begin or how to proceed. It goes without saying that one could never give a student the opportunity to experience all the problems he will encounter in the practice of dentistry. For that reason it seems advisable to concentrate teaching efforts on repetition and duplication of those problems that are more common and best illustrate the fundamental principles involved in accurate diagnosis and correct treatment planning.

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DENTAL HEALTH EDUCATION FOR THE DENTAL HYGIENIST

Values of a Course in Instructional Aids in Dental Hygiene[1]

MISS BLANCHE C. DOWNIE,[2] *Philadelphia*

The purpose of including a course in instructional aids in the dental hygiene curriculum at the University of Pennsylvania is to provide the student hygienist with sources of dental health material, to introduce to her the use of visual aids, and to offer suggestions from which may be developed effective teaching activities on the subject of dental hygiene.

The understanding of dental hygiene can be made very interesting to both the adult and the child. It can be a learning experience, from which may develop an active knowledge of the value of a healthy mouth and sound teeth. Dental health education goes hand in hand with preventive dentistry. According to the findings of Cheyne,[3] "The average cumulative loss of molars per 100 patients for all ages studied is nearly 50 per cent before the children reach the age of 15 years. It is our observation that the greatest damage to the permanent dentition takes place at a relatively early age in life. This is accomplished primarily by the loss of the first permanent molars." Quoting further from Cheyne,[4] "Cohen's caries figures show that at the age of 10 years approximately 80 per cent of the molars are defective."

These statistics alone are a great challenge to dentists and dental hygienists for better dental health teaching. They show that every dental appointment should include some dental health education to render it a successful treatment. Could it be our failure to approach our patients on these subjects, that such statistics exist?

The dental hygienist has the responsibility of the success or failure of any dental health program with which she is connected. She has a great influence upon the response received from her patients, and a great influence upon the attitude towards the profession of dentistry as a whole. Her association with the child affords her the opportunity to encourage the correction of dental defects revealed in dental examinations. She dispels fear of the dentist, and can explain, in an interesting way, the value of regular dental attention. The dental hygienist acquaints the child, at an early age, with dental chair behavior, and is able to

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[1]Presented before the Section on Dental Health Education for the Dental Hygienist, American Association of Dental Schools Meeting, Philadelphia, March 24, 1953.

[2]Late Associate in Oral Hygiene, University of Pennsylvania, School of Dentistry.

[3]Cheyne, Virgil D., and Drain, Charles L., J. D. *Res.*, 19, 583; 1940.

[4]*Ibid.*, 580.

carefully introduce him to what may otherwise result in a lasting frightening experience.

In a school system, the dental hygienist has a fruitful field and becomes aware of the varied programs needed to reach different age levels. It is here she realizes the great need for visual aid material. Let a child see and he will more readily believe. The classroom teacher is a great help to the hygienist, in that she enables her to ascertain the economic status of children under her care. Knowing this, she can better approach the parents concerning the corrections needed for each child. Dental health behavior of parent and child is the main goal in dental health education.

For many, any healthful behavior means an adjustment in their environment. A child should be taught at an early age to assume responsibility for that which he can control, but never be held responsible for that which he cannot control. Children can learn to take the responsibility of cleaning their teeth, having been taught a proper brushing method. They cannot, however, be expected to control their diet or provide dental care. It is the duty of the dental hygienist to point out the proper foods to choose, should a choice be presented and to build up confidence in the dentist for the day when a child will be taken to him. Children have a great influence upon their parents, especially in cases where parents are ignorant or thoughtless of certain health conditions. A dental hygienist must ever be aware of her instruction going directly into the home for it is there that it will do the most good. She must be quick to grasp every opportunity that will help a child enjoy a health habit, and utilize any incident that may happen in every day life, to promote her aim.

Mouth hygiene teaching lends itself easily to the realm of dreams, fantasy, banners, certificates, stars, parades, etc. There are many good reasons for using them at certain age levels. The importance of a method should not be under-valued, but it is well to recognize also the great importance of teaching dental facts in all age groups. A dental hygienist working with the elementary school child must be well informed and resourceful; preparation is of the utmost importance. If she assumes the responsibility of promoting better dental conditions, both children and adults must have adequate knowledge concerning the problem that confronts them. Age groups are most important to consider to get a message across. (1) It is a mistake to talk down to high school students; (2) Teenagers resent being referred to as youngsters; (3) Children do not like to be treated as children.

An effective way to create interest at all ages is by the use of visual aids. The success of handling this material, however, depends upon the enthusiasm and sincerity with which it is presented, as well as upon the ability to motivate the patient to carry out certain procedures. In schools, group pride does a great deal to stimulate the attainment of dental corrections. The test of mouth health teaching rests with these questions:

1. What results are we achieving?
2. Are we succeeding in making our patients, young or old, more dental conscious?
3. Are they thinking in terms of promoting dental health?
4. Are our methods of approach bringing the desired results?

The three fundamentals in health education are understanding, believing and motivation.

All this is brought to your attention because of the great need that is felt for better acquainting the hygienist, while in school, with methods of making and presenting aids for dental health education. Unless she has some knowledge of how to approach those who are under her guidance in promoting better dental health, she misses the real opportunity of service for which her profession was created.

Visual aids can be made and used to stress four important factors in preventive dentistry, namely:

1. Dental caries can probably be controlled by low intake of refined sugars.
2. Mouth cleanliness has proven to be a great aid to dental health.
3. The application or the intake of Sodium Fluorides are preventive measures.
4. Good nutrition is necessary during the formative period of tooth enamel.

It is also necessary to convince children that they can obtain real and immediate benefits such as freedom from toothaches, reduction of time spent in the dental chair and improved appearance by proper dental health practices. These may seem minor reasons to an adult, but to a child, they are the very outstanding ones.

The oral hygiene department of the University of Pennsylvania has stressed dental health education since the courses first started. Today each member of the senior class assumes the responsibility of making posters and an original dental health project. All groups of children coming to the clinic for prophylactic and fluoride treatments are taken to a classroom, by the student, for dental health education. School nurses, teachers, principals and parents appreciate this.

The making of visual aids has proven to be a very fine experience for the hygiene student for she sees how a visual aid brings a greater sense of reality to the patient. It also develops resourcefulness, which we all know is so needed by the student today.

The many requests from graduate hygienists from all schools for information as to methods of obtaining, making, and presenting dental health educational material has prompted the need for more training along these lines. It has resulted in the Dental Hygiene Department of the University of Pennsylvania expanding this work, to the extent that the course in Instructional Aids in the dental hygienists' curriculum is now a two-credit course. Each student spends a minimum of 48 hours in this program. It is hoped that the teaching of instructional aids will not only create a better understanding of dentistry, but that it will also promote a closer cooperation between the dentist, the dental hygienist and the patient.

Health Education for the Dental Hygienist[1]

ELIZABETH McHOSE,[2] *Philadelphia*

Health education for the dental hygienist encompasses such a broad area, I have divided this discussion into three parts: First, a consideration of the current concepts of health and health education, second, the place of health education in the oral hygiene curriculum, and third, a brief examination of possible specific content and methods needed to enable the dental hygienist to realize her highest potentialities. These potentialities refer to the individual as a responsible citizen and possible future parent, as well as the competencies for her profession. Unsolved problems and possible steps toward solution will be pointed out as the discussion proceeds.

I. *The Current Concept of Health and Health Education*

It is important at the outset to focus upon the currently accepted concept of health. The past 25 years have witnessed various prevailing interpretations of "health" and "health education." Much time has been spent in an effort to determine a definition of health generally acceptable as a working base. The World Health Organization has apparently presented such a definition, terming it:[3] "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." With the advancement in psychology and psychiatry during the past 20 years, mental health has come to be regarded as a vital factor in the total health of an individual. Perhaps

[1]Presented before the Section on Dental Health Education for the Dental Hygienist, American Association of Dental Schools Meeting, Philadelphia, March 24, 1953.

[2]Associate Professor of Health and Physical Education, Temple University.

[3]Constitution of the World Health Organization, p. 3, *The Chronicle of the World Health Organization*, 1947, Vol. I, No. 1-2, pp. 29-43.

the newest health emphasis is the recognition given to social health. When the World Health Organization adopted its definition, Dr. Brock Chisholm, the first president of the organization, pointed out in his presidential address, its implication that an individual who cannot live harmoniously with persons of different races, creeds, nations, and religions can no longer be termed a healthy person.

With this broadening of viewpoint concerning individual social health, there is noticeable evidence of a rapidly increasing sense of responsibility for the health of others. To assure the maintenance of the highest degree of safety and health for the individual, democratic living calls for cooperation. With today's speed in communication and travel, the health of the individual depends upon the health of the community and the nation. And the health of the nation depends increasingly upon the health of other nations, so that we find ourselves faced with the necessity of thinking in terms of global health. Obviously, health is not just subject matter within the covers of a book. It is a way of living. It is effective only when it functions in the behavior patterns. This then, is the threshold from which we approach our consideration of health education in the curriculum.

II. *The Place of Health Education in the Curriculum*

The oral hygienist may be termed a specialist. During the past decade education has shown considerable change in attitude toward specialization. The earlier attitude implied that as early in life as possible the student should determine his chosen field and then pursue the most direct route to his goal, eliminating every course which did not contribute directly to his field of specialization. The sad result of this type of specialization has been all too apparent: a constriction of viewpoint and a narrowing of the individual himself so that he possessed scant knowledge of what lay beyond.

Today we find the emphasis upon the acquisition of a general education along the lines needed by all persons for life in a democracy. Along with the stress upon the rights of the individual we include a broader emphasis upon social responsibility, or the finding of ways and means of living together in a society of free people.

The dental hygienist usually begins her specialization immediately upon completion of her four-year high school course or its equivalent. In view of the current emphasis upon general education, the basic problem is to secure as wide a base as possible within the framework of the essential requirements for the successful practice of her profession.

With the current acceptance of health as a way of living, health education quite naturally forms the basic core of general education. Health education is, of necessity, a continuous lifelong process in which all experiences, positive and negative, leave some imprint or inner modification upon the individual. This implies that health education occurs not only within the course bearing the label "health education," but as has been aptly stated,[4] "health education is the translation of what is known about health into desirable individual and community behavior patterns by means of the educational process." Thus, health information, practices and attitudes develop apace with each experience.

All members of the faculty of a school of oral hygiene are teachers of health. A large proportion of the subject and technical courses include health concepts and sound health procedures. Therefore it behooves all members of the staff to examine the courses for which they are responsible:

1. To determine whether the coverage definitely includes health information and practices which would naturally fall within its scope.
2. To scrutinize the subject matter for deficiencies and undue overlapping with other courses.
3. To evaluate the related health information which is stressed in terms of the probable needs of the students.

In this connection it might be well to mention the importance of consistency and unity of the health concepts which are being stressed by the various members of the faculty so that the student will not be confused by contradictory information. It is wise to provide for the constant evaluation of material as to the accuracy and recency of health information it may contain. In these days of rapid progress in science it is all too true that last year's health facts become this year's superstitions.

Definite plans for this type of coordination will need to be developed within the school to assure and to strengthen cohesive growth along health education lines and to help the student to effect for herself a close integration of the health education to which she is being exposed.

III. *Specific Content and Method*

The selection of basic health areas to be included in the health course for the dental hygienist poses a real problem. Within the time limits allotted for the course, is it best to delve deeply into a few units or to touch more superficially as many pertinent topics as possible?

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[4]Grout, Ruth E.: Health Teaching in Schools, 2d ed., p. 2.; Philadelphia, W. B. Saunders Co., 1953.

A modern course in health education is planned cooperatively by teacher and students to meet the needs and interests of the students. Certain basic areas are vital and essential as part of the dental hygienist's professional equipment. These have been fairly well determined by analysis of the needs of hygienists in the field in various types of situations, if not in actual research study, at least by the opinions of experts. Some of the student's needs are basic personal health needs, the fulfillment of which affects her development into a well-adjusted individual, a responsible citizen and a future parent as well as a successful dental hygienist. Some of these needs are basic health needs common to all persons: nutrition, cleanliness, sleep and rest, fatigue, exercise, recreation, good body mechanics, elimination, and general safety—habits calculated to maintain optimum fitness and personal efficiency.

In addition to these general needs there are specific individual needs to be discovered within the class. To begin with, the class is likely to be composed of students with widely different backgrounds as to previous health education experiences. They come from different high schools and states which have different standards in educational requirements. Within a single class one finds all degrees of health information and health awareness, ranging from the student who has been exposed to practically no direct health instruction to the person who possesses an excellent grasp of the fundamental scientific background of sound health behavior. Until there is general upgrading of the quality of health education in the elementary and secondary schools across the nation, this problem will persist.

A similar range in attitudes toward health and health education is noticeable. Each student is the product of her total previous health education experiences in the home, in the school and with friends. She is part and parcel of the culture of her home community. These early experiences are likely to color future reactions. Prejudices, fears and beliefs are readily communicated, especially in the early years and often persist well into adulthood.

A standard health knowledge test at the beginning of the course serves to point out deficiencies in certain areas. A repetition of the test toward the close of the semester will help to show progress. Observation of health habits should be made, not only by the teacher of health education, but by various members of the faculty. Personal interviews, conferences, conversations, surveys and check lists are devices which shed light on students' health needs.

The medical examination which occurs at the time of admission to

the oral hygiene school serves to highlight individual health problems. Everything possible should be done to have the required medical examination be a truly educative experience for the student. She should be given the opportunity to sit down with the physician for a review of the findings in order to understand her limitations and specific health problems. There should be subsequent opportunities for further counseling. All relations with the Health Service Department should be conducive to further future visits by the student. A follow-up program should be mapped out and the student's adviser and the health education teacher acquainted with their respective opportunities to help the student.

The dental hygienist's professional needs should be considered in connection with any personal health units which may be needed in the course. For example, the necessity of immaculate personal grooming, which is insisted upon in the technical and clinical courses, takes on new meaning when considered in the health class too. The relationship between sleep and rest and precision and accuracy of movement and coordination, ways and methods of avoiding infectious and communicable diseases, the importance of good vision in her work and the means of preservation of good vision are examples.

The hygienist will need to develop endurance and stamina to withstand the fatigue of long hours of standing and concentration. Correct posture patterns will help to prevent fatigue. Good body mechanics should be taught so that she may apply them to the various tasks included in her day's work, learning the art of quick relaxation and relief of tension in small muscles of the hands, the neck and the back.

Mental health should occupy a large block of time in the total curriculum. This is not only for the student's own personal adjustment, but also because her work is primarily with people and she needs to learn to get along well with people of all types and ages. She needs skill in adjusting to them quickly. She needs to appreciate the fact that poise and calm are a *must* for the hygienist and that her manner and understanding will influence the reaction of the patients. A recent article in a professional journal[6] suggested that role-playing during the training of the dentist would be invaluable as a means of helping him understand and learn communication on the emotional level rather than on the verbal level. This is equally important for the hygienist. Frequently the patient confides troubles and fears to her rather than to the dentist himself.

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[6]Hollister, William G.: Teaching Human Relations in Dental Public Health Work, *Am. J. Pub. Health*, 43, 326-329; Mar., 1953.

Since the hygienist will work with people of all ages, her health education courses should familiarize her with child development and growth, the problems of child health and maternal health, sex adjustment, family relationships, adult health and family health. These units contribute to her own development as an individual as well as from the professional angle. They should assist her in understanding patients and their health needs.

Family health includes problems concerning finance, nutrition, maintenance of family health, consumer education, geriatrics, and leads into a consideration of fads, fallacies and health advertising.

Health and hospitalization insurance plans, as they apply to the individual and to the family, furnish useful knowledge.

Since we think of people in their environmental setting, it is important that the dental hygienist understands the areas of public health concerned with the way people live: water supply, milk, food, the control of food and drugs, waste disposal, control of communicable diseases, vital statistics and the relationships of health services and facilities on the local, state and federal levels. These aspects are to be covered elsewhere in this symposium.

Considerable time might well be devoted to the study of school health and industrial health programs. An understanding of these two fields will encompass health service, healthful environment and health instruction methods applicable in situations in which so many dental hygienists find employment. Again, role-playing is of practical value in helping her understand basic interrelationships for she needs to develop an increasing awareness of the way in which feelings and emotions enter into health behavior in order that she may become an effective health educator.

The dental hygienist should see clearly her own role as a health educator. The health education class can contribute in a large measure toward building up the concept of dental health as a part of total health. Actually, all courses in the curriculum converge on this point, but perhaps the health class is in a strategic position to help the student interpret this for herself. As a health educator she will usually function as a member of a health service team in one of four situations: in private practice, in school or college, in a clinic, or in industry. All members of the team are also health educators. Individuals faced with health problems, which are serious to them, are usually vulnerable to health education in that they are likely to be sufficiently motivated by pain, fear, desire for health or some equally important emotion to do some-

thing toward changing their health behaviors. It would seem, therefore, that the dental hygienist is in a particularly strategic position to do effective health education because of the emotions which people are prone to attach to a trip to the dentist. The dental hygienist should be familiar with methods of initiating such education and in promoting motivation. She needs to become sensitive to the facets of appeal and to effective incentives to motivation of health behavior at various age levels.

Along with this emphasis upon the psychology of method should be mentioned the need for her training course to include opportunities to become familiar with audio-visual aids and teaching materials, the effective uses of such materials, their evaluation and sources. She should also become acquainted with the resources of the professional health organizations whose activities are concerned with phases of dental health.

There is a noticeable trend on the part of community groups to study their own health problems and through discussion to arrive at solutions on their own local level rather than involve federal help. The dental hygienist must have the background and tools to fit her for this type of responsibility. These basic tools include a clear concept of the inter-relationships among health agencies, both public and private, on local, state and national levels, the understanding of the possible contributions of her own special health area to the total health picture, and an attitude of readiness to participate in such community work.

IV. *Conclusion*

In this study an attempt has been made to highlight some of the important possibilities inherent in health education in the preparation of the dental hygienist. The modern concept of health as a way of living implies:

1. It must permeate the entire curriculum if it is to be effective.
2. The faculty should become aware of its need for a common background of health information and health concepts, and develop a favorable attitude toward effecting closer integration of health education within the various segments of the curriculum wherever it fits in most naturally and effectively.
3. There should evolve an efficient plan for the implementation of this type of integration.

However, this type of integration does not come about quickly. Some of it is contrary to past tradition. It can come about only through slow growth which starts within the school itself. The initial step might well consist of setting up a coordinating committee or health council with vision and belief in the power of group thinking. Within this setting the rest will follow in due time.

COLLEGE NEWS

University of Alabama:

PROMOTIONS

John J. Sharry, B.S., D.M.D., from instructor to assistant professor of dentistry.

Thomas W. Jones, B.S., D.D.S., from instructor to assistant professor of dentistry.

Marjorie Houston, B.S., D.M.D., from assistant professor to associate professor of dentistry.

Leon Schneyer, B.S., D.D.S., Ph.D., from assistant professor to associate professor of dentistry.

RECENT APPOINTMENTS

R. J. Barnett, D.D.S., to assistant professor of dentistry.

David Bloom, D.M.D., to assistant professor of dentistry.

Frederick Kraus, M.D., D.M.D., associate professor of dentistry and associate in bacteriology.

Miss Gertrude Sinnett, D.H., B.S. in Ed., appointed as assistant professor of dentistry and assistant director of Division of Dental Hygiene.

The administration of the University of Alabama has given approval to an M.S. degree in dentistry with a major in clinical dentistry and a minor in basic science. The two-year dental hygiene program leading to a certificate in dental hygiene has been expanded to include additional study for the B.S. degree.

Grants totaling $188,200 have been received by the faculty of the School of Dentistry.

University of California:

In addition to the regular orientation meeting held on the first day of the school year, the freshmen students were guests of the Dean at a series of luncheons. During the first week of classes the students in groups of twelve met with the Dean and members of the freshman faculty. Following the meal there was an informal discussion relating to items of student interest, such as methods of grading, examinations, student conduct, fraternities, etc. There was a second series of five luncheons with the students again as guests of the Dean, but this time the Dean and faculty did not attend, but representatives from the upper classes were there to advise the first-year students of their problems as seen through the eyes of other students.

An evaluation of the program indicates the results were most favorable and plans are being made to repeat this program next year.

Dalhousie University:

Dr. J. D. McLean, a graduate of the University of Toronto, Class of 1942, and recently a member of the faculty of the University of Alberta, has been appointed professor of dentistry in Dalhousie. He will also serve as secretary of the faculty.

Harvard University:

Announcement has been made of new additions and renovations which provide additional laboratory space for an expanded program of research into the basic causes of dental disease. The new facilities include laboratories, two cold rooms, an incubator room, a special equipment room and an isotope area for research activities.

The improvements enable all clinical teaching to be concentrated in a compact area designed to bring about close teacher-student relationships and to make the most effective use of the students' time. Each student has his own "office" with dental chair, equipment and supplies; the technical laboratory, casting room and sterilizing alcove being close by.

University of Illinois:

Dr. Stanley D. Tylman, professor of crowns and fixed partial dentures, has re-

turned to Chicago after visiting Portugal, Spain and Italy. He presented postgraduate courses at the University of Torino, gave lectures and conferences in several cities and at the Eastman Clinic in Rome. The Italian Dental Society bestowed its gold medal upon Dr. Tylman in recognition of his service to that organization.

State University of Iowa:

Twenty-four students have enrolled in the new two-year dental hygiene program. The program is organized so that a student can, after finishing the two-year course, continue studying for a bachelor's degree.

Miss Helen M. Newell, who holds a bachelor of science degree and a dental hygiene certificate, is responsible for coordinating the program.

Directed by Dr. Kenneth E. Wessels, head of the Department of Pedodontics and Preventive Dentistry, the second postgraduate course for the school year in Dentistry for Children will be offered March 1-6, 1954.

University of Kansas City:

Announcement is made of a two-year graduate program in oral surgery leading to a master's degree. This includes one year of academic work in the basic sciences and one year of residency at General Hospital. The School of Dentistry and General Hospital are both fully approved by the American Board of Oral Surgery. For information contact Dr. John D. Gehrig, director of oral surgery.

University of Pennsylvania:

Miss Mary Prince, R.N., R.D.H., has been appointed to the faculty of the course in oral hygiene. She is filling the teaching position made vacant by the sudden death of Miss Blanche Downie last March.

University of Southern California:

Dr. William Ward Wainwright has been appointed professor of oral diagnosis and head of the department, succeeding Dr. Cecil H. Collins, retired. In addition to teaching X-ray and diagnosis, Dr. Wainwright will supervise the examining of the 1000 patients who come to the clinic each month.

Temple University:

Dr. Leonard Parrish, recently returned from military service, has resumed his duties as instructor in the endodontic department.

The following appointments have been made: Dr. Philip E. McLaughlin, class of '47, as instructor in oral diagnosis and Dr. Marvin Maser, class of '44, as instructor in crown and bridge.

Postgraduate courses in occluso-rehabilitation, periodontal pathology, clinical occlusion, advanced orthodontics and periodontics have been announced. For details write to Dr. Louis Herman, director of postgraduate studies.

University of Tennessee:

Dr. Thomas R. Meadows, associate professor of operative dentistry, has been named acting chief of the division. Dr. Meadows, formerly an assistant professor in crown and bridge, rejoined the staff as associate professor last January, after military service in Japan.

University of Toronto:

The following staff changes are announced: Dr. D. H. Jenkins succeeds Dr. R. E. Moyers as professor of orthodontics and head of the department. Dr. A. A. Antoni has completed a three-year training program in oral surgery at the Henry Ford Hospital and joins the staff as associate professor in dental oral surgery and anaesthesia.

Promotions include: Dr. R. E. Diprose from assistant professor to associate professor in dental surgery and anaesthesia; Dr. J. B. Macdonald from assistant professor to associate professor of dentistry;

Drs. M. E. Lucyk, H. Mercer, A. L. Posen, P. T. Smylski and J. Charlotte Whitney from demonstrators to associates in dentistry.

New appointments as demonstrators have been accepted by Drs. J. Gordon Chalmers, G. L. Hancock, and W. W. Pressey. Dr. E. M. Madlener has joined the staff as a clinical instructor.

Dr. R. L. Twible returns to the staff after a year's leave.

Misses W. J. Doughty, M. L. Haselton and M. V. Willett have joined the staff as dental nurses.

A series of continuation courses (refresher courses), varying in duration from three to five days, is offered during the present session. These include anatomy as applied to dentistry, pedodontics, dental radiology, periodontics, operative dentistry, endodontics, orthodontics (for the general practitioner), and dental oral surgery and anaesthesia.

For details write the Dean.

Medical College of Virginia:

Postgraduate courses, varying in duration from three to six days, in crown and bridge prosthesis, oral diagnosis and roentgenology, complete denture prosthesis, periodontics, pedodontics, exodontia and oral surgery, partial denture prosthesis, roentgenology, operative dentistry and endodontics are announced for the winter and spring quarters of 1954.

Opportunities for graduate study in dentistry and related basic sciences leading to the degrees of master of science and doctor of philosophy are also available.

For information write to S. J. Kreshover.

Washington University:

Announcement is made of postgraduate courses in anatomy of the head and neck, diagnosis and oral medicine, occlusal equilibration, oral surgery, pediatrics, complete denture prosthesis, crown and bridge prosthesis and partial denture prosthesis during the early months of 1954. For information write the school.

Western Reserve University:

The appointment of Dr. Stanley R. Suit as instructor in periodontia and preventive dentistry has been announced.

University of Oregon:

Dental teaching by means of television, using the Dage closed circuit camera, was recently demonstrated to the faculty. The consensus of opinion was that closed circuit television teaching has possibilities, but that skill in handling the camera was important and further improvements in focusing and in the clarity of the resultant picture would enhance the media's use.

As a feature of last summer's in-service program for professional development, summer course workshops were conducted in which analysis was made of several courses. New or revised course programs resulting from the workshops were instituted during the fall term.

The following staff changes are announced: Dr. Ernest A. Hurley is the acting head of the postgraduate department, replacing Dr. Vinson Weber who is on military leave. Dr. Rulon H. Johnson has replaced Dr. Merrill G. Swenson, retired, as head of the prosthetic department. Dr. Donald Porter will be acting head of the department of pedodontia in the absence of Dr. Theodore Suher who is on military leave.

New faculty members include: Drs. Richard Allard, Robert Foster, Paul Hathorn, Paul Johnson, Paul Kunkel, Jr., Matthew A. Matthews, Jan Muller, Gordon Potter, James F. Russell, James Trezona and Miss Mary A. Henry. Dr. Demetrios Hadjimarkos has been appointed as a full-time staff member in charge of public health dentistry and for teaching caries prevention and pedodontic courses. Dr. William B. Wescott has been appointed head of the oral tumor registry department.

BOOK REVIEWS

Dental Anatomy. This is the third edition of a well-known textbook by Moses Diamond, D.D.S., late professor of dental anatomy, Columbia University School of Dental and Oral Surgery. There has been some revision and rewriting of each section to bring the text up to date. In addition to the revisions, considerable clinical material has been added in the way of photographic illustrations, as well as many chapters on comparative dental morphology, development of teeth, formation and calcification of hard tissues, head and neck anatomy and growth and development of the skull. These additions are a distinct improvement over the previous editions.

The author of this book has taken a natural science and made it an applied science. He emphasizes the relation between tooth morphology and the art of reproducing it accurately. Knowledge of the detailed description of the tooth form is indispensable to the general dental practioner because such knowledge must be incorporated in the daily operative procedures. Excellent diagrams are used to illustrate each step of the work in the reproduction of the anatomical form of each tooth.

Despite the fact that some illustrations on tooth morphology may not be quite well drawn (somewhat too angular) and illustrations on head and neck anatomy do not face the page of the text giving the descriptions, the material which "includes the research findings of the last two decades" is up to date and presented in a lucid style.

The chapter on variations and anomalies covering developmental, functional and professional deformities of human teeth is excellently presented and profusely illustrated.

Bibliographies are also very extensive and furnish source material for a more detailed study.

Possibly the outstanding feature of this book is the bringing together in one single volume significant information on the growth and development of the jaw and skull, the formation of human teeth and their anomalies, etc., which, together with many chapters on head and neck anatomy, contribute to make this volume one of the most complete and well rounded textbooks in the field of dental anatomy. Dr. Moses Diamond's book will unquestionably benefit the student of dentistry and the general practitioner, as well. Published by The Macmillan Company, New York, 1952, 461 pages. Price $15.00.

—N. T. Nguyen.

Periodontology — Diagnosis and Treatment. This is a new book by Frank E. Beube, D.D.S., Clinical Professor of Dentistry and head of the Division of Periodontology, Columbia University School of Dental and Oral Surgery. Dr. Beube has prepared a textbook for the general practitioner, as well as the undergraduate dental student. He has combined the features requisite to the clinical training of the student with those suitable to the needs of the dentist desiring to include periodontia in a general practice.

The book is written primarily for the clinician and the clinical teachings of periodontia. An attempt has been made to integrate all phases of dental therapy towards the prevention and eradication of periodontal disease. The order of the presentation follows the course of study judged most suitable for correlation and learning, and thus allows the text to function as a handbook as well as textbook. Each chapter is written in a concise yet fluent fashion. Words have not been wasted. A special chapter on periodontal therapy in systemic disease describes dental precautions and contingencies associated with

each disease and is a valuable contribution to a periodontal text.

The format is especially pleasing. Reading is easy. The illustrations are excellent and accompanied by complete legends. Technical hints in bold type add a touch of informality which should please and aid the reader. Tables are used freely as aids in learning. Each chapter is followed by a substantial list of references and suggested reading material. The progressive dentist and the undergraduate dental student should find this text practical and stimulating. Published by The Macmillan Company, New York, 1953, 752 pages, 492 illustrations, 31 tables. Price $15.00.

—*Benjamin Dienstein.*

Noyes' Oral Histology and Embryology. This seventh edition by Isaac Schour, B.S., D.D.S., M.S., Ph.D., is a comprehensive review of a most complex subject and would constitute a valuable addition to the library of the student, the oral histology instructor and the general practitioner of dentistry.

It is a concise, coherently written presentation of the multiple aspects of oral histology and embryology, concerned not only with the strict morphologic characteristics per se, but also integrates the structural aspects very closely with the functional properties. Of inestimable value are the references to histophysiologic patterns and clinical considerations.

The great bulk of modern day research developments receive emphasis in the sections dealing with histochemical studies, electron microscopy and other biologic methods of study.

Part II deals exclusively with the laboratory approach and presents material and instructions for conducting 25 classroom periods in the teaching field.

A review of the recent advances in the field of dental caries is presented together with added emphasis on the biology of the pulp and its response to physical and chemical irritants as related to cavity preparation and filling materials.

The photographs and photomicrographs represent an excellent presentation of human material studies to replace the former animal specimen photography. Seventh edition containing 448 pages, 512 illustrations on 290 figures and 18 plates, 9 in color. Published by Lea & Febiger, Philadelphia, 1953. Price $8.00.

—*Robert E. Oslar.*

Orthodontic Theory and Practice. A second edition by Samuel Hemley, D.D.S. In the preface the author states, "This book has been prepared for use as a text for both undergraduate and postgraduate courses in Orthodontics."

The opening chapters discuss the development of occlusion, normal occlusion, the growth of the component parts of the face, and the forces of occlusion. These provide background for the material that is to follow.

In the chapter on etiology, the author does not consider the role of heredity to be important. It is his opinion that "Characteristic deformations of bone such as exist in malocclusions can readily be traced to non-hereditary causes."

Tissue changes associated with tooth movement and classification of malocclusion are covered in detail, and Angle's classification is critically evaluated.

The closing chapters dealing with the centroid of the denture, the orbital law of the canine, and the key-ridge as diagnostic aids are denounced even though these are not now generally taught in the orthodontic curriculum. The chapter on the mandibular incisor unjustly attacks the value of the work of Tweed and considers the use of extraction in orthodontic treatment as something that should be known about but seldom practiced.

This text does not discuss the use of appliances or describe treatment procedures. As an undergraduate text, if the closing chapters were not used, it would be a good

text. As a text for postgraduate students it falls short in many respects. Published by Grune and Stratton, Inc., New York, 1953, 600 pages, 369 illustrations. Price $14.50.

—*Eugene E. West.*

Clinical Dental Prosthesis. This is the title of a new book by H. R. B. Fenn, F.D.S., R.C.S., D.D.S., K. P. Liddelow, F.D.S., R.C.S. and A. P. Gimson, L.D.S., R.C.S. This book is one which should be of value to the undergraduate, the general practitioner and to the denture specialist. The contents of the book and the clear manner of its presentation indicates a profound amount of knowledge based upon a wide clinical experience. The concise manner of presentation probably comes from years of instruction of undergraduate students and as a result the text is very easy to read and to understand.

For the undergraduate this text should be of great value in orienting the student to the subject of denture prosthesis, plus providing him with the fundamentals of denture construction. For the graduate student there is a wealth of information based on clinical experience which should be of great value in daily practice both in the construction and in the maintenance of dentures. The book should be in the personal library of the teacher of denture prosthesis, both as a source of information and as an example for logical presentation of his lecture material. Published by Staples Press, Incorporated, New York, 1953, 502 pages. Price $10.00.

—*George A. Hughes.*

Oral Histology and Embryology. This is the third edition of the popular text and reference by Balint Orban. This edition continues with the original concept of producing an integrated cooperative work. The wide acceptance of this idea is reflected by the need for this book to go into a new edition only four years after its previous revision. In the original compilation of this text, the various chapters were drafted by recognized authoriteis on the specific subject and each author's manuscript was submitted to all other contributors for discussion. Coordination of the different views presented was accomplished by the editor.

Excellent illustrative material was obtained from many sources. The present book has 364 pages with 263 text illustrations, including 4 color plates. Twelve new illustrations, some of them composite, replace earlier ones used. The principal aim has been to eliminate statements that could be misinterpreted or cause confusion. Particular changes appear in the chapter on "Enamel," which was revised by R. F. Sognnaes, and in the chapter on the "Glands of the Oral Cavity," which was reduced and simplified. Of the present 15 contributors listed, many are new with this edition. Published by C. V. Mosby Company, St. Louis, 1953. Price $8.50.

—*Harry E. Frisbie.*

A Collection of Summaries of the Works of Dr. Kanae Hanazawa, by Seiichi Matsumiya, Takahiro Matsui, Tetsuya Kanatake and Nagashige Sekine and edited by Takamichi Tsusaki. Pages 155 with 24 illustrations. Paper. Published by the Dr. Kanae Hanazawa Commendation Society, Tokyo Dental College, 1951.

This memorial volume is a part of what may be called a picture or diagram or picture puzzle of the explosive evolution of Japan between the date of the Perry expedition and the beginning of World War II. This period coincided purely by chance, perhaps, with the revolutionary discoveries in bacteriology, pathology and medicine in which Germany took no small part, and perhaps again not wholly by chance in this instance, with the development of Germany as a world power under Bismark and the German General Staff. During this period many of the promising Japanese young men not only found their

way to Germany for study and training, but also in many instances were under government or school direction during their sojourn there. The nascent Japanese talents and spirits thrived under this influence and discipline and carried back to Japan not only the impact of this force on their youthful, pliant capacities, but even the discipline and form of the institutions in which they had been trained. The result, vast changes in the professions and sciences and also in politics, the army, navy and business. In turn Japanese science and Japanese individuals played no small part in the advancement of Science during this period. Such names as Kitisato, Shiga, Noguchi and others, are firmly established in the sciences of bacteriology, nutrition and pathology. Noguchi chose to stay in the West instead of returning to his homeland.

And so the subject of this review in the course of time was ordered to Germany by his school, the Tokyo Dental College, and in his 31st year to study under Professor Romer. Four years earlier Romer had published his outstanding achievement in the field of oral histo-pathology and Hanazawa came under Romer's direction at the very crest of his teacher's achievement. Germany's entrance into World War I cut short the stay of our then youthful subject but he had been there long enough to fix the form and pattern of his subsequent career beginning with the publication of his research entitled: "A Study of the Minute Structure of Human Dentine," item 21 on page 11 of this volume.

This memorial is made up of the abstracts of publications in three categories: 1. Hanazawa's own researches and theses. 2. Those of his students and assistants produced under his direction. 3. His textbooks and similar publications. The memorial volume accordingly is divided into three parts. In the first there are 50 titles, of these a number are worthy of special mention as: A Study of the Minute Structure of Dentine; Caries of Dentine; Experiments on Root Canal Filling; and Substitution Alloys for Gold. In Part II there are 117 titles, indicative of the comprehensive influence of Hanazawa on the training and preparation of the students of Tokyo Dental College for their careers as research workers, teachers and practioners. Of these summaries only a few are mentioned: Ono's studies of the form of the tooth pulp and studies on the teeth found in ovarian cysts; Masaki's studies of teeth in vitamin deficiencies; Nishimura's histological studies of dental caries; the work of Masaki and Mimura on the geographical distribution of mottled enamel in Japan; Terasaka on the distribution and form of nerve fiber in human teeth; Sekine on bone ankylosis after root canal fillings; Matsui's researches on the dentine matrix; and many others. The selections made do not disclose the breadth covered nor does it include all that are well worthy of mention. There are 12 titles in Part III; of these are mentioned only the excellent textbooks on Dental Histology, 252 pages with 116 illustrations; Dental Embryology, with 69 illustrations, and Dental Pathology, with 406 pages, 148 illustrations in black and white and 100 original reproductions of color photographs.

Hanazawa's native ability and creative genius combined with the Japanese talent to profit in the transfer of European institutions and culture to his home situation served himself, his school, his profession and the Japanese nation nobly. The tribute paid to him by his colleagues in the preface of this memorial is not only highly commended but also seems to be a fitting close to this review: "Established in appreciation of the brilliant merit of Dr. Kanae Hanazawa—who gave up the greater part of his life to the study of dental science, and the progress and development of dentistry in Japan, and who contributed so greatly to Education Circles and the Scientific world."

—*Edward H. Hatton.*

BOOK ANNOUNCEMENTS

Antibiotics. This is the title of the second edition of a book by Robertson Pratt, Ph.D., Professor, Pharmacognosy and Plant Physiology, University of California, College of Pharmacy, and Jean Dufrenoy, D.Sci., Research Associate in Antibiotics, University of California, College of Pharmacy.

This is a book of 398 pages, including index, 2 appendices and 87 illustrations with one plate in color. Each one of the Antibiotics is discussed in detail both as to origin and use. Published by J. B. Lippincott Company, Philadelphia. Price $7.50.

—John E. Gurley.

Annual Report, Kellogg Foundation. This is the Annual Report of the W. K. Kellogg Foundation for 1951-52 in which the story is told of financial assistance granted to educational institutions, including general education, hospitals, nursing, dental, medical and public health schools. During the year 1952 the Foundation spent just under $4,500,000 in carrying out its program of education, and during the twenty-two years of its existence in cash and property just under $39,000,000 have been expended.

A copy of this report may be had for the asking by addressing The W. K. Kellogg Foundation, Battle Creek, Michigan.

—John E. Gurley.

Teaching in Colleges and Universities

A limited number of copies of TEACHING IN COLLEGES AND UNIVERSITIES with Special Reference to Dentistry, by Lloyd E. Blauch and Associates, is still available. This book of 349 pages, although making reference to dentistry, deals broadly with teaching at the college and university level.

The 18 chapters cover comprehensively such topics as: interpretations of learning; the work of the teacher; the lecture method; discussion methods; individualized methods; laboratory exercises and demonstrations as a means of instruction; writing as a means of instruction; visual aids; and the encouragement of good teaching.

The book is useful as: (1) a help to the faculty member who desires to examine critically his teaching with a view to improving his service; (2) a source of information to college and university administrators on the improvement of teaching; and (3) a reference for library use.

Cloth bound copies may be obtained for $2.50 each, postpaid, or if ordered in blocks of ten, for a special consideration of $10.00, (plus postage) for each ten, from the

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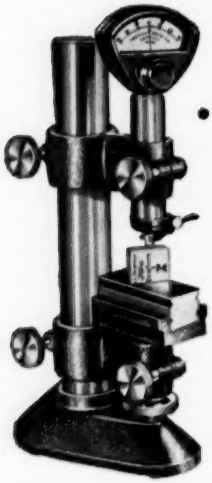

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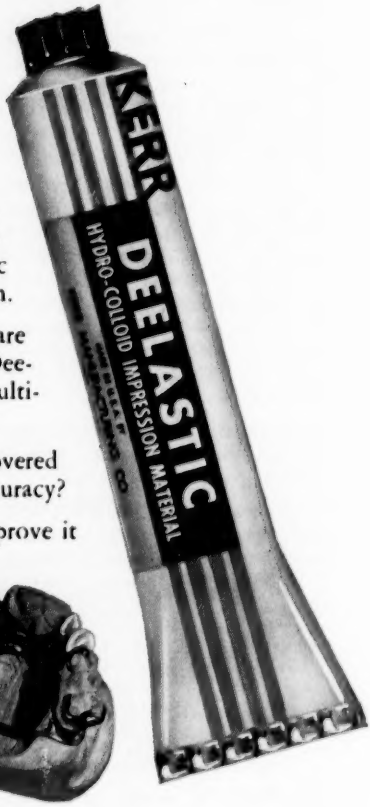

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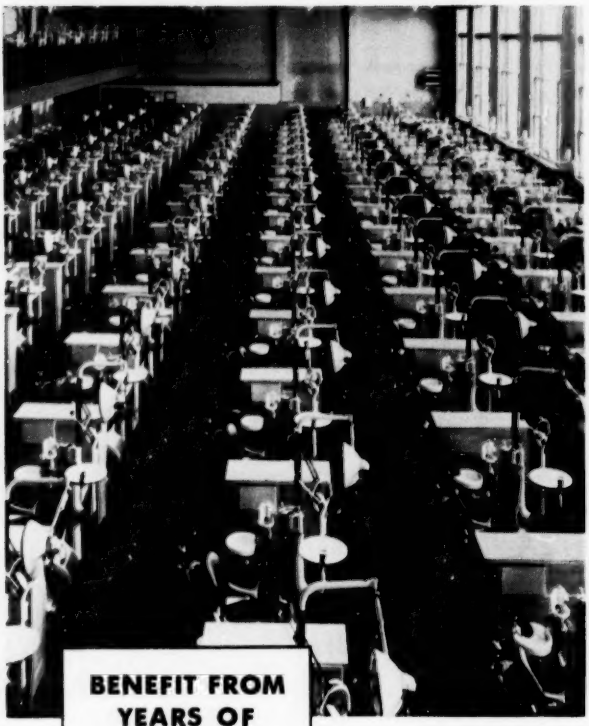

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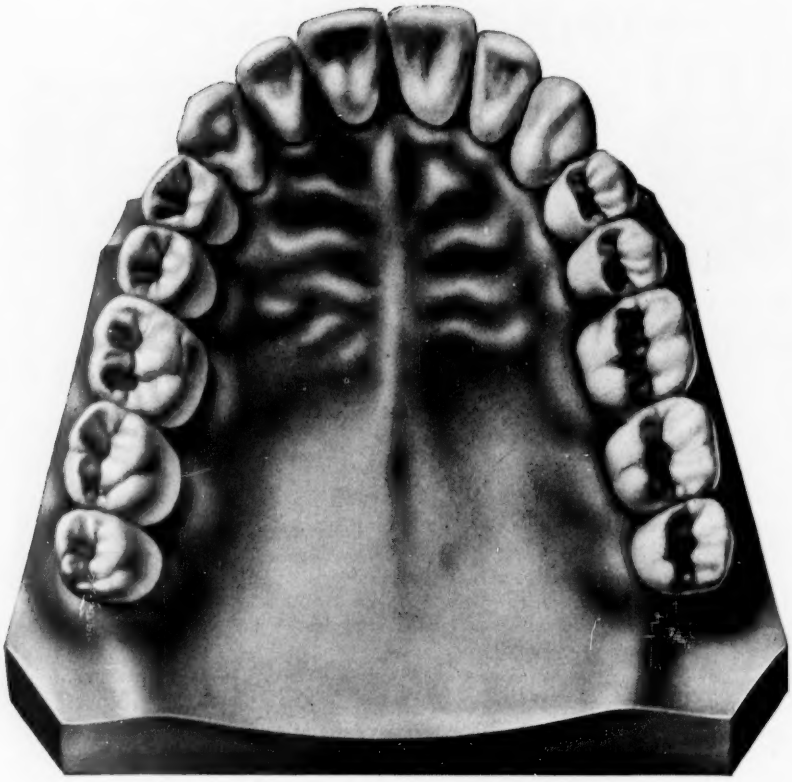

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